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USSR Report

ENERGY

No. 107

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GENERAL

ELECTRIC POWER

RURAL ELECTRIFICATION PROGRESS, PROBLEMS

Moscow TEKHNIKA V SEL'SKOM KHOZYAYSTVE in Russian No 4, Apr 82 pp 3-4

/Article: "In Pursuit of Rural Electrification"/

/Excerpt/ Rural electrification is developing at a rapid pace. During the years of the 10th Five-Year Plan alone some 840,000 kilometers of power transmission lines and 35 to 110 kV transformer substations with a total rated capacity of 30 million kVA were built and put into operation. The consumption of electricity in rural areas increased by 50 percent, reaching nearly 118 billion kW-hours in 1981. There was a 60 percent increase in the availability of electric power for labor; and the use of electricity for municipal and every-day needs per resident increased by 30 percent.

At collective and state farms more than 14 million electric motors and 2,500,000 various electrical appliances with a total rated capacity of nearly 95 million kW were installed. At present many farms are supplied with electricity at levels similar to industrial enterprises. More than 8,000 poultry farms, livestock complexes, interfarm associations, collective and state farms are consuming three million kW-hours and more of electricity each year. At nearly 10,000 farms there are 500 or more electric motors at each. There are especially large numbers of electric motors at farms in the Baltic republics, the Urals, Siberia, Northern Caucasus. The percentage of electric power units within the structure of power capacities of agriculture has reached 21 percent. There are also farms where the capacity of electric power units has exceeded the capacity of the tractor park.

Each year there is an increase in the amount of work on electrical installation, adjustment, technical maintenance and repair of electrical equipment; this work is performed by the enterprises and organizations of Goskomsel'khoztekhnika /USSR State Committee for Supply of Production Equipment for Agriculture/. Thus, in 1979 the volume of such work increased by 17 million rubles and in 1980 by 26 million rubles. During the years of the 10th Five-Year Plan some 1.5 billion rubles were spent on these kinds of work.

An extensive social and economic program for converting rural areas was outlined by the 26th Party Congress. Through the comprehensive intensification of agricultural production in the 11th Five-Year Plan there is a need to substantially increase the production of product from the fields and farms and to achieve a thorough increase in economic efficiency of the collective and state farms. To successfully realize the food program and to more fully meet the needs of farm workers, the construction in rural areas of housing units, clubs, schools, stores, hospitals, service facilities, and roads will be continued.

A great deal of work remains to be done by the rural electric power service. By 1985 this organization must bring the consumption of electricity up to 160 billion kW-hours; it is planned to build in rural areas some 57,000 kilometers of 35 kV and higher power transmission lines; 374,000 kilometers of 6 to 20 kV power transmission lines; 335,000 kilometers of low-voltage networks and a corresponding number of transformer power substations; to provide farms with electrical equipment, devices and cable valued at 9.5 billion rubles; to increase the manufacture of assembled equipment for monitoring microclimate at livestock and poultry-raising complexes, hothouses; and also other modern electrical equipment.

The amount of start-up and adjustment work and repair and maintenance work being performed by the enterprises and organizations of the Goskomsel'khoztekhnika at farms and complexes will be raised to two billion rubles.

To further improve the means of mechanization and automation of production processes in livestock farming, poultry raising and feed preparation a "system of machines for the comprehensive mechanization of livestock farming in the years 1981 through 1990" has been approved. This system calls for the use in the sector of nearly 1,000 equipment designators of electrified equipment and machinery, including 260 new ones. The implementation of this system will make it possible by the end of 1985 to raise the level of comprehensive mechanization of production processes at cattle farms to 62 percent on the average - pig farms - to 70 percent and poultry farms to 90 percent. The system will also make it possible to reduce operating costs and [illegible] the number of workers.

The powerful force of electric power is helping to create man-made rivers in the republics of Central Asia, the region beyond the Volga River, Stavropol'skiy Kray and the Crimea; to assimilate new lands and to obtain from them high yields of cotton, grain and feed crops, vegetables and fruits.

The use of new kinds of electrical equipment is significantly raising the efficiency of agricultural production. Thus, sets of equipment for controlling technological processes at large livestock complexes are making it possible to effect an 8-fold reduction in labor expenditures for the production of a centner of meat. It is providing an even greater savings at poultry farms.

With the increase in the consumption of electricity in power stationary processes (excluding irrigation) by 1985 as compared with 1980 in an amount of 7 to 8 billion kW-hours, the annual savings of means for operating outlays will be 2.1 billion rubles and for labor expenditures 2.8 billion hours.

The path to the further electrification of rural areas is responding to the urgent needs of the farmers. However, not everyone fully understands how they should think about this important matter. The construction and installation administrations of the union republic ministries of power and electrification, agriculture, land reclamation and water management failed to accomplish the planned volume of work during the past five-year plan. Last year they did not fulfill the plans for the construction of power transmission lines and transformer substations in the Georgian SSR, Moldavian SSR, Tajik SSR, Altayskiy Kray, and in Orenburgskaya, Astrakhanskaya, Arkhangel'skaya, Voronezhskaya, Kalininskaya, Pskovskaya, Tyumenskaya and other oblasts. The modernization and capital repair of old networks are proceeding very slowly in these areas.

To rectify the situation it is necessary to improve the supply of material-technical means to construction projects, to increase the responsibility of farm managers for the timely introduction of power projects.

The industrialization of agricultural production requires an uninterrupted supply of electricity to collective and state farms. Disruptions in the supply due to emergencies and unplanned disconnections, especially during the winter, lead to equipment malfuctions, equipment stand-downs, and losses of product.

Many farms in the Lithuanian SSR, Moscow Oblast, and in several oblasts of the Ukrainian SSR managed to avoid these losses. All livestock farms, poultry farms, and other facilities, which are carried as first category consumers, in these areas have reserve power supply systems. For example, in Moscow Oblast some 913 dairy farms, all livestock complexes with 800 and more head, and poultry farms have had their own power supply system since 1979; 76 percent of the transformer substations have two-way power supply systems; and the average length of the 6 to 10 kV power lines does not exceed ten kilometers.

The enterprises of the USSR Ministry of Power and Electrification are doing a great deal of work aimed at increasing the stability of the power supply system. Each year millions of insulators and supports and tens of thousands of kilometers of wire are replaced with new ones. In 1981 a significant reduction in the number of emergency disconnections of electricity was achieved in the Turkmen SSR, the Ukrainian SSR, the Maryyskaya ASSR, and in Bryanskaya, Kirovskaya, Kurskaya, and Novgorodskaya oblasts. At the same time this work is not being done satisfactorily in several places.

The task of the power industry workers is to ensure a reliable supply of electricity for the large agricultural enterprises, to take from the collective and state farms and livestock complexes all power lines connected with the state power system into its own balance, to improve the operation and raise the technical fitting of the operating subelements.

Along with this it is necessary to do a lot of work to conserve electric power.

The efficient use of electricity and the rational use of equipment depend to a large extent upon the skillful operation of the power services of the collective and state farms and the USSR Goskomsel'khoztekhnika enterprises. However, these organizations are experiencing a critical shortage of engineers, electricians, skilled electrical installers; they also are hit by a too large turnover in personnel. For this reason the equipment and machinery is often not maintained, is deteriorating, and malfunctioning before it should.

It is necessary to expand the training of such personnel in the institution of higher learning, technical schools, professional-technical institutions, and in courses aimed at increasing skill-level; it is also necessary to improve working and living conditions for the electric power industry workers, and to supply them with means of transport and instruments. This, in turn, will make it possible to keep personnel and to reduce the turnover.

Experience shows that at those farms where electrical equipment is used wisely and a sound standard of electric power consumption has been implemented, a unified system of planning and accounting has been established there is always savings in electricity. Last year in the Buryatskaya ASSR some 41.7 million kW-hours of electricity were conserved; in the Mordovskaya ASSR some 37 million kW-hours; in Krasnodarskiy Kray - 40 million; in Kuybyshevskaya, Vladimirskaya and Kemerovskaya oblasts from 11 to 27 million kW-hours. Farms in the Estonian SSR and Kostromskaya Oblast also achieved significant savings of electricity.

In the Soviet Union there are now 1,640 regional and 96 oblast-level Sel'khozenergo enterprises /rural power supply centers/. Last year these organizations fulfilled work in equipment maintenance and electrical equipment repair valued at 340 million rubles. The planned preventive maintenance, the high quality of production, the training and securing of personnel have made it possible to raise the reliability of power units, to significantly expand the sphere and efficiency of using electricity, and to reduce the emergency malfunctioning of electric motors.

For example, the Orlovskaya /Orel/ Oblast Sel'khozenergo Association within a relatively short period of time has done work at farms in installing, starting and organizing the repair and maintenance of

power units valued at nearly one million rubles. At 485 livestock complexes and other production facilities repairs were made on electric wiring, lighting fixtures and switch-insulation equipment. At 94 farms electric power consumption meters were adopted, which made it possible to account for use by meter readings rather than according to the installed rated capacity of its current collectors. This has resulted in a significant reduction in electric motor malfunctions and in 1981 amounted to only 9 percent (in 1980 - 22 percent).

Similar associations are successfully operating in other oblasts of the RSFSR, the Ukrainian SSR, the Belorussian SSR, the Kazakh SSR, and the Kirghiz SSR.

But they face a critical shortage of equipment, electrical materials, spare parts, measuring devices and instruments.

The local party and soviet organs must strengthen their control over the fulfillment of plans for the introduction of new power lines and the modernization of old power transmission lines, transformer substations, for ensuring the uninterrupted supply of electrification to the rural areas. They must more extensively use socialist competition among the power industry workers and more actively propagandize the experience of the leading collectives.

Increasing the power capacities of the rural areas is an important measure for the further development of agricultural production. There is no doubt but that all agricultural labor collectives will make their contribution to the successful fulfillment of the established plans for the second year of the current five-year plan and with their shock labor to provide a worthy greeting for the glorious anniversary of the Fatherland.

8927
CSO: 1822/169

GEORGIAN OIL CHIEF VIEWS PROGRESS, PLANS

Tbilisi KOMUNISTI in Georgian 20 Feb 82 p 2

[Interview with Gruzneft' General Director Revaz Tevzadze by Vl. Ginzburg: "Georgian Oilworkers' Valor"]

> [Text] ...Considering the importance of big growth of the production of petroleum and casing-head gas, which today have a substantial impact on the present state and prospective development of the republic's fuel and energy complex, it is gratifying to note that this relatively new sector of the Georgian economy is overfulfilling plans and obligations every year. Nevertheless, greater prospects are at hand, and we cannot therefore be content with what we have achieved.
>
> E. Shevardnadze

The land of Samgori! Everything comes to life here in the spring: The fields turn verdant, orchards blossom, birds warble. It is winter now, however, and everything is clad in white; only the wind is at play--the kind of wind that can knock you down. The sun is shrouded in leaden clouds and mist. Some 30 years ago this land was parched, bare, and waterless.

I call to mind the past, when man exerted his will to bring the Iori River's water to the land of Samgori and pump it from the main canal into the huge basin to form what we now call the Sea of Tbilisi. That was a grand national celebration! At the time, however, the tens of thousands of celebrants could hardly be aware of what was to be found in the depths of Samgori's earth.

How the area has changed! People labor here the year round. Tractors roar steadily in the vineyards and orchards. Samgori's roads carry a steady stream of trucks loaded with pipes, cement, building materials, and drilling equipment.

Geologists came to this land in 1974, and the first oil rigs appeared. Their difficult efforts were rewarded with success. Oil was struck in the Samgori-Patardzeuli area.

Today we bring you a report from Samgori. Gruzneft' Production Association General Director Hero of Socialist Labor Revaz Tevzadze has this to say:

Georgian oil has a long history. Attempts were made to recover oil as far back as the 12th century. A number of small oil deposits were being worked last century in East and West Georgia. Prospecting and exploration work began in the 1930's. Eight oil deposits were found, but they did not result in much industrial output.

The year 1974 can justly be considered the time of breakthrough, for substantial deposits were found and exploitation began. Oil workers call 1974 the year Georgia's oil industry was reborn. Consider this: Up to 1974 all the oil produced in a year added up to as much as we produce now in three days. In terms of increase in production volume our republic occupies a leading place in the USSR Petroleum Industry Ministry system. And, it should be noted, Georgian oil is classified as "light" (top quality); it is also one of the cheapest in the USSR. Gruzneft's collective has surpassed the all-union average in labor productivity and reduced the cost of commercial product by one ruble.

Our oil workers were the first among the republic's production associations to fulfill the 10th Five-Year Plan ahead of schedule. In that period the volume of recovery rose by 12 times and more. Millions of tons of above-plan oil and casing-head gas were produced, for which Gruzneft' was the first to be entered on the Board of Honor at the GSSR Exhibit of Achievements in the National Economy. The association has been awarded the All-Union Challenge Red Banner 19 times in a row. Our collective also successfully fulfilled the production program of the first year of the 11th Five-Year Plan.

The republic's oil workers were assigned big tasks by the 26th GCP Congress: By the end of the 11th Five-Year Plan they are to supply all the republic's oil needs from our own resources.

To do this it will be necessary to boost oil production by 1.5 times in the five-year period, to carry out extensive exploration work in the eastern part of the Samgori deposit and in promising areas of Ninotsminda and Rustavi, and to boost yields in older deposits which still contain oil, also to increase drilling by 30 percent this year over the first year of the 11th Five-Year Plan and carry out extensive work to increase oil reserves.

All Gruzneft' enterprises have launched socialist competition with new vigor under the slogan "Sixty Shockwork Weeks for the 60th Anniversary of the USSR!" In honor of the celebration, the association's collective has pledged to give the country 15,000 tons of oil, drill 1200 meters of rock, market 150,000 rubles worth of commercial product, and save 800,000 kwh of electricity and 500 tons of standard [uslovnoye] fuel over and above the plan. That's the kind of labor gift Georgian oil workers are preparing for our homeland's jubilee.

Long gone is the time when oil production was figured in tens of tons. In recent years it has been measured in millions of tons, and "oil worker" is a term of respect equal to steelworker or miner in this republic.

The oil worker's job is tough and complicated. Oil prospectors and operations workers toil day and night, in cold or blazing heat, always under the open sky

and on steep hillsides. They don't have time to sit around. If the rig stops, oil is lost.

With the growth of oil production the association has acquired experienced, expert masters of their crafts.

We visited the drilling crew headed by Parnaoz Chrikishvili, who was a delegate to the 26th CPSU Congress. His rig is located in Samgori, near the village of Khashmi.

For 37 years now he has been "seeking" oil and, indeed, has "found" a lot of it in that time. Now, Parnaoz tells us, they have already drilled 1300 meters in this well; no oil yet--but there will be, in his experience. His crew always overfulfills the plan. In the first year of the 11th Five-Year Plan alone they drilled 5680 meters--142 percent of the plan. The crew has held the title "Best Drilling Crew in the USSR Petroleum Industry Ministry" for 3 years now and does not intend to give it up. Parnaoz has been awarded two Orders of Lenin for meritorious labor.

Driller Levan Khizanishvili has been awarded the GSSR State Prize for outstanding performance in labor. Crews headed by drilling foremen Abram Mukhiashvili and Mirian Bubashvili are doing excellent work. The list of names could go on....

The sharp increase in the production of oil and casing-head gas plus a substantial rise in labor productivity has helped to boost workers' and specialists' earnings considerably. A leading driller, for example, can earn 350 to 400 rubles a month; production operators earn almost 250. These are good indicators.

The association does, however, have its difficulties and unresolved problems. There is much to be done to further enhance the effectiveness of geological-exploration and drilling work so as to find new promising deposits of oil and gas. Things are not as they should be with respect to the exploitation of older wells. The construction of production bases is proceeding way too slowly. The republic Construction and Rural Construction ministries' contractor organizations are not keeping pace with construction-installation work plans on our projects, so that our drilling enterprises are often placed in a difficult situation.

It took way too long to resolve the matter of organizing Gruzneft' crews working by the progressive method of labor organization--the unified order [yedinyy nakaz] and cost-accounting method.

And how are you dealing with the housing problem, I asked the General Director.

The reason it's called a housing problem, he answered, is that it still remains a critical problem! We are building a lot of housing, spending 4.5 million rubles annually on it. Now we've arrived at a point where we can supply housing for workers and specialists who have been with us at least 3 years.

In the 11th Five-Year Plan a micro-district housing development will be built for Georgian oil workers in Tbilisi's 26 Commissars Rayon, next to the Airport Highway. The project has already been approved. It will consist of a modern ensemble of residential buildings to include stores, dining facilities, a cafe, drugstore, school, kindergarten, sports facilities, and other amenities. Over the five-year period we will spend 25 million rubles on the project.

...As we were concluding this report, night fell over the land of Samgori. On the oil derricks the lights blinked on, making them resemble ships plying the ocean at night. On one of them a bright red star glowed in the sky. It goes on like that every night to honor Parnaoz Chrikishvili's drilling crew, winners in socialist competition.

The oil workers continue their labor watch.

6854
CSO: 1813/070

FUELS

PROGRESS OF SOVIET GEOLOGISTS MARKED

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 4 Apr 82 p 2

[Article by B. Zubarev, first deputy minister of geology of the USSR: "Relay Race of Discoveries"]

[Excerpts] The main task of the Soviet explorers of the depths has become the creation of geological maps, the fundamentals for any work to investigate the depths of the earth.

We now pass to the creation of large-scale state geological maps. Their compilation, in addition to traditional surveying methods, will widely employ materials from space and other remote surveying methods, radar, infrared and aerial high-altitude.

The creation of these maps marks the beginning of a new stage in geological study of the country's territory.

A powerful mineral-raw material base should be prepared in the 1980's. It will be capable of guaranteeing the efficient development of the national economy in the coming century. One of the main problems, as before, which is important for all the national economy is the strengthening and development of the country's fuel and energy complex. The geologists have made their contribution to resolving it: in the first year of the 11th Five-Year Plan, 36 oil and gas fields were found, and one-third of them were on the territory of West Siberia.

Exploration was completed in 1981 and reserves were confirmed of the Dauletabad-Donmezskiy gas field in Turkmeniya. It has high national economic importance. Exploration of the Shurtan field in Uzbekistan was completed. Its operation will increase extraction and improve the gas supply not only to the Central Asian republics and Kazakhstan, but also the center of the country. Thelargest gas condensate fields in the southeast European sector of the country were found in the near-Caspian basin. At one of them, the Astrakhan, according to the decisions of the 26th CPSU Congress, creation of a production complex for extraction of gas, condensate and gas sulfur was stipulated.

Coal has been given a large role in this five-year plan in the development of the fuel and energy complex. Last year, the plans for increase in coal reserves, fuel shales and peat were fulfilled. The most important energy problem has become the development of the Kansk-Achinsk coal basin. Here the geologists are preparing sections for construction of superthick sections and for studies on coals. It is planned to produce chemical reprocessing products from them, including liquid fuel. Accelerated preparation of a major base for coking coals capable of providing for the future metallurgical plants in the east of the country is underway.

There is no union or autonomous republic, no kray or oblast where a geologist is not working today. In the beginning year of the five-year plan, over 60 ore fields of ferrous and nonferrous metals, bauxites and other solid minerals were found. The raw material bases were expanded and strengthened for a number of active mining enterprises and formed territorial-industrial complexes.

The Soviet Union has discovered many thousands of fields. It is natural that searches for new ones is continually being complicated. We have to find hidden formations and conduct geological exploration in regions of difficult access. Under these conditions, the efficacy of searches and exploration depends in the closest possible way on the introduction of the achievements of scientific and technical progress.

The USSR Ministry of Geology has developed a five-year plan of scientific-research work: over a hundred scientific and technical problems grouped in 19 directions. The most important of them are regional geological-geophysical studies using data of deep and superdeep drilling, aerospace methods, study of the laws governing the formation of oil and gas field arrangement, development of new methods for reprocessing mineral raw material, investigation of the floor of seas and oceans, geological work in the BAM [Baykal-Amur Trunk-line] zone. Studies to solve basic problems are being made jointly with the USSR Academy of Sciences.

Last year, the transition of the geological industry to two- and three-link system of control was mainly completed. Geological associations were set up and the level of concentration and specialization of the industry rose. The brigade contract is being extensively introduced into the sector.

9035
CSO; 1822/165

GEOLOGISTS FAULTED FOR INEFFICIENT EXPLORATION FOR MESOZOIC OIL

Baku VYSHKA in Russian 8 Apr 82 p 2

[Article by S. Salayev, head of the laboratory "Geology of Oil" of the Institute of Geology of the Azerbaijan Academy of Sciences, doctor of geological-mineralogical sciences, professor; "Solve the Problem by Joint Efforts"]

[Text] The Basic Directions for Economic and Social Development of the USSR for 1981-1985 and for the Period to 1990 has placed before the Azerbaijan oil workers the task of increasing the reserves of oil and gas to stabilize their extraction. Its successful resolution is significantly associated with the discovery of new oil and gas fields in the Mesozoic deposits of the republic. It is consequently difficult to overestimate the importance of the discussion of problems of the Mesozoic oil which the newspaper VYSHKA is holding.

Study of the oil and gas content of the Mesozoic deposits in Azerbaijan by deep drilling was started back in 1940. This set of deposits now has over 250 wells with total drilling footage of about 850,000 m. As a result of the search and exploration, a number of positive results have been obtained. Thus a new type of field has been discovered, the Muradkhanly where the oil formations are confined to formations of the upper Cretaceous. Oil and gas formations have been found in the deposits of the upper Cretaceous also in the near-Caspian-Kubinskaya Oblast on the areas of Zagly-Zeyva. Liquid fuel has been found in the lower Cretaceous on the areas of Begimdag-Tekchay, and on the are of Keshchay an industrial stream of gas has been obtained from the middle Jurassic.

But in all of this it is impossible not to see that the efficiency of search and exploration for Mesozoic deposits in the republic is very low. At the same time, we have real prerequisites to discover a little Mesozoic oil in the near future. But for this we primarily need to concentrate the main forces of the drillers and equipment on the promising trends in exploration.

One of the main components of success of search and exploration is clarification of the structural conditions for occurrence of the Mesozoic oil and gas in the depression zones. Doctor of geological-mineralogical sciences B. Grigor'yants in his article "Where to Look for Mesozoic Oil" which initiated this discussion, writes that one of the reasons for the low efficacy of drilling in the Mesozoic was the hypothesis on the correspondence in

the folded structure of the Mesozoic and higher Cenozoic deposits, although there is also an existing opinion in science about their basic differences. Engineers F. Ragimkhanov and G. Tumikyan, arguing with him, indicate that not only individual representatives of science knew about the drastic variability in the structural plans with depth (especially regions which are complicated in their structure), but also those practicing specialists who defined the occurrence sites of the exploratory wells.

It seems to me that it is not important whether only some representatives of science knew about the drastic variability in the structural plans, or whether the scientists and production engineers did too. It is important that the fact of existence of drastic discrepancies between the Mesozoic and Cenozoic structures, which impair, and in the final analysis reduce the efficiency of the search and exploration is stated by the absolute majority of geologists. It is sad that these discrepancies have not yet been clarified in detail.

In interpreting the complicated Mesozoic structural level, all of us, representatives of science and production, expect a lot of help from the geophysical methods of exploration. I would like to say here that the service of exploratory geophysics of Azerbaijan has played an enormous role in discovering oil and gas fields in the Cenozoic deposits both on land and at sea. These methods are of definite help in revealing the Mesozoic structures. But at the same time it is impossible not to note the insufficient information content of the geophysical methods of exploration to reveal and prepare the Mesozoic structure in tectonically complexly constructed promising zones of Azerbaijan (Shemakhino-Gobustanskiy, interfluvial area of Kura and Iora). This was noted in the decision of the conference on the Mesozoic epoch which took place in December 1977 in Tbilisi.

This conference also noted other reasons for the unsatisfactory results of the geological exploration for Mesozoic oil: starting of deep drilling of structures that are not always sufficiently prepared by geophysical methods, and lagging in the regional geological-geophysical work. It follows from all of this that it is necessary to improve the geological reliability of the geophysical methods of exploring in complexly constructed regions. Then the sites for occurrence of the exploratory wells for Mesozoic oil will be defined more reliably and efficiently, and at the same time, the efficiency of their drilling will be improved.

The Institute of Geology of the Azerbaijan Academy of Sciences jointly with the association "Azneft'" has ade a scientific evaluation of the long-term oil and gas resources of the Mesozoic deposits of Azerbaijan. The most promising areas were isolated based on the findings. This is primarily the Yevlakh-Agdzhabedinskiy trough. It is necessary to continue searches for oil and gas formations in the upper Cretaceous sections of this trough. The opinion has been advanced that within the central Kurinskiy depression there are areas which are similar to Muradkhanly. Therefore, in addition to continuing exploration on the Muradkhanly the exploration of the formations in the adjacent regions should be intensified.

Detection of oil and gas formations in the volcanogenic formations of the upper Cretaceous does not at all eliminate the task of searching for natural fuel in the carbonaceous rocks however. Liquid fuel formations in the volcanogenic rocks are only the "tail" of a lot of Mesozoic oil. Its chief formations are associated with the sedimentary complex which is the source of oil and gas generation.

Considerably long-term resources of fuel are also associated with the Mesozoic deposits of the Gobustanskaya Oblast, in which the zone of the Yavandag-Sangachal'skiy gravity maximum is considered the most favorable. It should be noted that central and southern Gobustan where the indicated maximum is located is an area of development of favorable facies of Cretaceous deposits expressed as volcanogenic-sedimentary formations, in particular, limestones in the upper part of the section. It is natural that the outlook for oil and gas content of the Mesozoic and primarily the Cretaceous is highly evaluated here. The Yavandag buried elevation in this case must be viewed as a basically important object, more precisely, even as a springboard which will permit a more substantiated exploratory drilling in the regions adjoining this elevation. We therefore share the opinion of B. Grigor'yanets that practical steps should be taken for the possible discovery of Mesozoic deposits by single parametric wells within the indicated maximum.

Attention should be concentrated on investigating the formations of reef-origin as potential oil and gas traps. The results of studies made in the last several decades to investigate the geology and oil and gas content of reef complexes both in the United States and Canada confirmed the urgency of this problem. These results led to the discovery of the richest oil and gas formations in our country as well. Analysis of the available material on formations of reef-origin in Azerbaijan makes it possible to consider them one of the objects for searching for large amounts of Mesozoic oil.

One should consider the southeast submersion of the axis of the Tenginsko-Beshbarmakskiy anticline in the limits of the sea, the banks of Kamni Dva Brata, Tsyurupa, Apsheron, and Andriyevskiy to be the most favorable zone for oil and gas accumulation in formations of reef origin. In addition, an oil and gas content of formations of reef origin is possible in the dry land area of the near-Caspian-Kubinskaya Oblast (Zeykhurskiy trough).

The formations of reef origin of the minor Caucasus are highly evaluated in relation to the outlook for oil and gas content. Here the oil and gas formations could have been formed on the continental shelves which are abundant in coral and volcanic islands.

Improvement in the efficiency of search and exploration for Mesozoic oil requires all possible deepening and expanding of scientific research, development of a technique for searching for fuel in different structural formations. At the same time, such a simplified approach to the question is found in the arguments as the assertion that "Mesozoic oil can be found on the basis of a study of core samples by petrographic and bituminological methods." It is quite obvious that positive results will not be obtained by single types of laboratory studies. Only a comprehensive approach to the problem of Mesozoic oil and the joint efforts of the production and scientific research organizations can result in success.

9035
CSO: 1822/165

LAGGING CRITICIZED IN FIRST QUARTER AZERBAIJAN OIL REPORT

Baku VYSHKA in Russian 21 Apr 82 p 2

[Article by O. Nechipurenko: "Have All the Reserves Been Utilized?"]

[Text] The warm greeting given in the beginning of the second year of the five-year plan by Comrade L. I. Brezhnev to the participants in the construction and development of the new complex of production units at the oil refineries of the Azerbaijan SSR inspired the workers of the sector to new labor accomplishments. Having broadly evolved socialist competition in honor of the 60th anniversary of formation of the USSR, they produced products in the first quarter for thousands of rubles more than stipulated by the commitments. All the ministry's enterprises coped with the assignment. Tens of thousands of tons of kerosene, fuel mazut, diesel oil, coke and other valuable products were produced in addition to the plan. Forty-five percent of all the products instead of the 39 planned were given the sign of quality. The planned marks for growth rates in labor productivity and a number of other indicators were significantly covered.

It is gratifying that the collectives of the sector enterprises have achieved weighty results in the struggle for conservation of fuel-energy and raw material resources. In the last quarter, over 7,000 T of conventional fuel, about 20,000 gigacalories of heat, and a lot of electricity were saved. Or take another example: in the first quarter of last year, the irreversible losses of oil products were 2.12 percent of the total volume of oil refining, and in January-June of this year, 1.96 percent. This is much lower than the plan and corresponds to the average national standard of losses.

It should be noted that since the beginning of this year the enterprises of the sector have had to work under complicated conditions of an acute shortage of raw material and reagents. There was only one escape: by using the leading equipment and technology, continually increase the depth of recovery. The oil refiners used it efficiently. The depth of recovery for the enterprises of the ministry as a whole increased in the last quarter by 2 percent, which is a good indicator.

The collective of the electric-desalinating unit of the atmospheric-vacuum pipe still at the Novobaku Oil Refinery imeni Vladimir Il'ich, led by the bearer of the Order of Labor Glory S. Zeynalov achieved especially high

results. Despite the fact that they mainly had to work with low-quality oil, the oil refiners increased the depth of recovery almost by 1.5 percent, have produced tens of thousands of tons of light petroleum products in addition to the assignment.

The workers of the units in the third shop of the oil refinery imeni 22nd CPSU Congress led by S. Mustafayev, M. Mamedov, S. Babayev and G. Aliyev, as well as many other collectives worked intensively.

However, despite the attained success, the oil refineries could not reach the limits outlined by the plan and the socialist commitments. Lagging in the nomenclature of the manufactured products which has been chronic in the sector for a long time, has not yet been overcome. In the last quarter, the assignment for manufacture of automobile gasolines was not fulfilled. This mainly occurred because of the unsatisfactory operation of the catalytic cracking units at the Novobaku oil refinery imeni Vladimir Il'ich. Their output is not used by more than 70 percent.

The production engineers are not the only guilty parties, the scientists of the Institute of Petrochemical Processes of the republic Academy of Sciences are also responsible. The units were reconstructed at their suggestion. Without sufficient monitoring of the introduction of their developments, they bear a lot of the responsibility for the current lagging of the enterprise in this indicator. We note at the same time that erratic running of the catalytic cracking units resulted in the nonfulfillment by the Novobaku Oil Refinery imeni Vladimir Il'ich of the assignments for producing polymer distillate, the raw material for manufacturing additives for lubricants.

As for the oil production that, as is known, is concentrated at the plant imeni 22nd CPSU Congress, then, despite the differences in technology, the problems here are very similar. During January-March, thousands of tons of oils were underproduced here. Whereas the lagging in the production of large-tonnage tractor oils can be explained to a certain measure by the difficulties in exporting them, the interruption in the assignment for production of a number of valuable types of lubricants cannot be justified by this. There are obvious internal reasons. One of the problems that should also be resolved with the scientists is the insufficient output of the de-asphaltization and selective purification of oil units. This has already been discussed in VYSHKA on 11 September of last year in the article "Effect of the Leading Technology." It is true that the Institute of Petrochemical Processes has made a suggestion to improve the efficiency of the de-asphalitzation units. But the specialists of "Azgiproneftekhim" did not agree with them. The matter stopped here.

It is apparent that all the trouble lies in the lack of a target program at the enterprises not only for introducing scientific developments, but also attaining and securing the planned indicators. It is difficult to explain in any other way the fact that the million rubles spent every year by the oil refiners on scientific research has still not yielded the proper effect.

There are still a lot of unused reserves in the matter of improving the quality of the manufactured products. In the last quarter, the plant

"Neftegaz" did not cope with the assignment for the manufacture of products marked by the honorary pentagon. The plan imeni 22nd CPSU Congress continues to receive claims for the technical characteristics of the low-octane gasoline and the automotive oils. It should be noted that the quality of the finished products is inseparable from the quality of the raw material and its separation strictly by grades. But the plants have recently begun to pay less attention to this question. This confirms, in particular, the fact that reprocessing of the Surakhan select oil at the plant imeni A. G. Karayev was as though switched to a "common boiler," while the leaders of the enterprise made references to the insufficient resources of this type of raw material which was intended for producing special grades of oils.

A lot has been done at the enterprises of the Ministry of the Petrochemical Industry of the republic to implement the decrees of the party and government for improvement in the economic mechanism. Thus, certain enterprises, including the leading Novobaku Oil Refinery imeni Vladimir Il'ich have switched to operating on indicators for standard purity of the product. However, judging from the fact thatin fulfilling and overfulfilling the state plan the sector enterprises on the whole have not coped with the assignment for over 30 units (including at the plant imeni 22nd CPSU Congress, half of the units), a lot still remains to be done in the area of improving the system of planning and control.

The oil refiners are currently faced with large tasks. The production growth rate must be over 109 percent in April, and the output of products with the sign of quality must be 46 percent of the total volume. This is much higher than the planned for the second quarter as a whole. At the same time, undersupply of oil for refining was very perceptible. In order for the oil refiners to fulfill the plan and commitments under these conditions, it is necessary to guarantee the strictest regime of economy and conservation while strengthening the struggle to increase the depth of recovery and improve the quality of the petroleum products.

Responding with work to the appeals of the CPSU Central Committee for 1 May, and expanding even more the competition for a worthy meeting of the 60th anniversary of formation of the USSR, the collectives of oil refiners can reach more weighty limits, and will increase their contribution to strengthening the fuel and energy potential of the country.

9035
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FUELS

ROCK IMPURITIES ALLOWED IN COAL MIXTURES

Frunze SOVETSKAYA KIRGIZIYA in Russian 15 Apr 82 p 2

[Article by N. Kiselev, in-house correspondent of SOVETSKAYA KIRGIZIYA: "Not All Rock Is 'Combustible'"]

[Text] Empty rock frequently falls into the mass of coal unloaded at the Osh fuel base.

"All of this is considered 'combustible' rock," says the head of the Almalyk division for fuel shipments A. Mambetaliyev.

Reference was made tothe numerous claims of the fuel consumers about the large number of rocks in the coal. Where does this extraction come from?

"From the open pit 'Almalyk'," A. Mambetaliyev curtly explains.

At the same time, the collective of this enterprise is considered one of the best among the republic coal miners. The Almalyk workers work with a considerable advance on the assignments and cover the plans for grading.

We went to the open faces of "Almalyk" together with A. Mambetaliyev, the quality inspector of the department he heads, S. Maksimova, and the head of the inspection from the administration "Kirgizuglesnabsbyt" A. Peretyat'ko.

Powerful dump trucks with coal ascend to the old sorting machine and throw it onto the massive metal grid of the reception bin. The fuel of lower compactness is immediately spilled through and falls onto the belt conveyers, while the clumps have to be mashed by the bulldozer caterpillar tracks. Fragments of rocks are crushed with the coal. Why are they brought here?

The head of the section of technical control of the open pit N. Litvinova and the director G. Izyumov cite the heterogeneity of the coal bed structure. Not everyrock piece can be immediately noted and picked up by the excavator bucket to be taken from the face, they say.

"But the extractors do this work nevertheless. They obtain a 10-percent bonus for the best quality of unloaded fuel," the director asserts.

Clumps of barren rock on the metal grid of the reception hole at the sorting machine somehow have a poor correlation to the assertions of G. Izyumov.

At "Almalyk" great hopes are placed on the planned reconstruction of the open pit, including the sorting complex and therefore practically nothing is being done now to guarantee purity of the fuel. They even ignore those organizational-technical measures which the inspection "Kirgizuglesnabsbyt" has recommended.

Thus, instead of the five rock-sorters in a shift, we saw only two. And it turned out that one of them was supplied for the belt conveyer by mechanic A. Ismanov at the last minute because of the arrival of the inspectors.

The rock-sorters, not hurrying, took the rocks from the rapidly running belt. One was thrown out, and three-four were let by. There was no possibility of cleaning the coal better. The rock-sorting place was poorly lit and it was therefore difficult to distinguish the fuel from the rock. The incoming coal from the reception bin was not regulated. The device for its smooth descent from the conveyer into the bunker was broken. The fuel falls downwards with a crash at a great speed and is crushed.

N. Litvinova who is responsible for the quality of the extraction was not concerned about what was seen. On the contrary, she assured us that it was an accident that there was a lot of rock now. Usually there is only a little, no more than 7-8 percent. But the inspector asserts that the contamination of the fuel often reaches 50-70 percent.

Judging from everything, however, this does not disturb the "Almalyk" specialists. No matter how many tons of coal they extract, they do not care how much coal and how much rock there is. For glory and wages are directly dependent on the quantity of rock that is supplied from the open pit. Only is it becoming for an enterprise that is considered to be the leading to have such an indifferent attitude towards the quality of the fuel shipped to the consumers?

9035
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KUTAISI PLANT PRODUCES MOST OF USSR'S OIL WELL PUMPS

Tbilisi KOMUNISTI in Georgian 18 Feb 82 p 2

[Article by Sh. Amashukeli and D. Gedenidze under rubric "Quality Mirrors Production": "It's From Kutaisi, It's Prestigious"]

[Text] Hundreds of derricks dot the oil fields. Underneath, the electric engines work tirelessly to pump the precious "black gold" to the surface in order to provide a steady stream of fuel for all sectors of our country's big national economy.

Uninterrupted extraction of petroleum, increased production, is dependent on many factors, including the efficient operation of these electric engines. It is vitally essential that they be rugged and reliable. The fact is that the engines "dive down" into the depths of the earth, and "contact" with them is very difficult. Weighing nearly half a ton and made of scarce materials, these engines are difficult to raise to the surface and hard to get to for repairs. They are not supposed to come back "topside" until their guarantee runs out.

From all this it is easy to grasp the vital responsibility that is assigned to the collectives of enterprises producing items like these, especially a collective involved in manufacturing 70 percent of all the oil engines produced in the country.

Not many people, perhaps, are aware that the enterprise that has been assigned this difficult and honorable mission is located in Georgia--specifically, in Kutaisi. Let no one think, however, that this is anything new to the collective of the Kutaisi Electrical Machine Plant. In fact, they were making engines here long ago but not in such quantities. Such a substantial rise in production has come about due to sharp improvement in product quality.

To be sure, so far not one of the four engine models [modifikatsiya] has been given the State Emblem of Quality, but this by no means discredits their worth. The plant's management deliberately refrained from submitting them for Emblem status. They decided to completely renovate their assortment in order to boost their capacity substantially, and they have achieved their goal. The State Commission has approved a test batch of the new engines and given the plant collective the go-ahead to set up operations carefully so as to begin series production of the improved model by year's end.

"Starting next year nothing will stand in the way of submitting the engines for certification," said the plant's chief engineer D. Chikhladze. "Next year the proportion of top-category goods in our total output will stand at 30 percent, reaching 40 percent by 1984. By the end of the 11th Five-Year Plan the figure will rise by another 18-20 percent."

Thus, the Kutaisi Electrical Machine Plant is becoming a basic, specialized oil-engine producing enterprise. That doesn't mean, however, that the electrical workers will be engaged solely in making engines. The national economy will continue to get electric loaders, which by the end of the five-year plan will account for a rather substantial percentage of the rise in products bearing the State Emblem of Quality. The plant's designers and engineers have decided to supply customers with more efficient and reliable electric loaders. Their ideas are taking shape now, and several test samples are to be manufactured next year. One of the main features of the new product is that it will be 100 kilograms lighter--in direct response to our party's slogan "The Economy Should Be Economical!" The efforts of Kutaisi's electrical workers, incidentally, are also quite remarkable in this regard. The enterprise has a well thought out, broad analytical program oriented toward conservation, and is implementing it steadily. By introducing a number of technical and technological innovations they have substantially reduced metal consumption. In 1979, for example, the plant used up 3337 tons of rolled pipe; last year it used only 597.8 tons. Consumption of brass was reduced from 11.6 to 6.3 tons. Compared to the final year of the 10th Five-Year Plan the plant is consuming 175 tons less rolled bronze and 30 tons less copper.

Discussion of the Kutaisi plant would not be complete without mention of the fact that it also makes electric locomotives for mines. To be sure, this product represents only about 5 percent of the enterprise's output and will soon be taken out of production; nevertheless, the electrical workers are still paying it close attention and have not let their customers down.

The first year of the 11th Five-Year Plan was a time of particular growth of the enterprise: The state production output plan was fulfilled by 105.1 percent, and the national economy was given 1,000,085 rubles worth of above-plan engines, electric loaders, mine locomotives, and consumer goods. And speaking of consumer goods, let us add that the plant's electric water pumps are in high demand.

In considering last year to be a time of particular growth, we are going by the fact that production volume grew by 39.9 percent and labor productivity by 37.5 percent compared with the final year of the 10th Five-Year Plan. The product assortment plan was fulfilled 100 percent. This means that not one contract was broken with respect to supplying goods to customers. This situation enables the collective to convert to net output. Indeed, if contract discipline is violated the net output concept loses all significance. This is, if you please, the "point" of perfecting the economic mechanism. The Kutaisi plant was awarded the Challenge Red Banner of the USSR Electrical Equipment Industry and Sector Trade Union on the strength of last year's technical-economic indicators. We found this out as we were preparing this report--a kind of fitting crown to all we have said.

Kutaisi's collective also set off at a fast pace in January. They produced 221,000 rubles worth of goods above the plan, and all other indicators are also exceeding plan figures. Some 40 percent of the plant's personnel are working by the brigade method of payment. By the end of the five-year plan this figure should reach 70 to 80 percent.

A remarkable labor mood prevails at the plant. The collective is getting ready to celebrate the 60th anniversary of the formation of the USSR in a worthy manner.

6854
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CONSTRUCTION WORK FOR TURKMEN GAS INDUSTRY LAGGING

Ashkhabad TURKMENSKAYA ISKRA in Russian 2 Apr 82 p 2

[Article by V. Rashkevich: "From Mutual Claims to Mutual Assistance"]

[Text] Remarks from a republic conference of gas-industry workers.

Experience indicates that only united, common efforts that are guided with precision, accurate planning and a well-thought out engineering approach can promote success. This is precisely what the participants of the republic conference of gas-industry workers, which convened recently at Order of Labor Red Banner Shatlykgazstroy [Shatlyk Trust for the Construction of Gas-Industry Enterprises], spoke about.

More than 300 billion cubic meters of natural gas were recovered in the republic during the 10th Five-Year Plan. This is twice as much as during the two preceding five-year plans put together. More than 1 million meters of penetration were accomplished, seven new gas and gas-condensate fields were built up with facilities and put into operation, and 82,000 square meters of housing, schools, kindergartens and stores were turned over. Chief of the All-Union Turkmengazprom [Turkmen SSR Gas Industry Association] V. A. Talday spoke about all this in his speech.

At the same time, the prime contractors--Turkmenneftegazstroy [Association for the Construction of Oil and Gas Industry Enterprises in the Turkmen SSR], Turkmenglavenergo [Turkmen SSR Main Administration for Power and Electrification], TuSSR Minstroy [Ministry of Construction] and others--did not fulfill the plan for construction and installing work during the last five-year plan. This, in turn, disrupted the introduction into operation of certain facilities, which affected the recovery and the quality of treatment of gas preparatory to transport. As a result, fulfillment of the five-year plans was made complicated.

Ten new gas and gas-condensate fields with a total growth in recovery of 42.1 billion cubic meters must be introduced into development in the republic in order to meet the goals of the new five-year plan. The Severnyy Balkui, Gugurtli and Mollaker fields should be put into operation this year. And then the Uchadzhi, Shorkel', Vostochnyy Tedzhen and the Dauletabad-Donmezskoye, which is largest in "blue-flame" reserves. It is planned that most facilities will come to maximum design capacity during the second year of operation. Sixteen installations for integrated gas treatment and six booster compressor stations are to be built, and 424 kilometers of trunk gas pipeline are to be put into use.

But the builders still have not coped completely with the tasks charged to them. Nonfulfillment of even the understated amounts of construction and installing work has led to disruption in turning over a number of facilities: a cooling installation at Naip and booster compressor stations at Achak, Naip and other places. Last year Turkmenneftegazstroy Association carried out the plan by 76 percent, and Naipgazstroy [Naip Gas Industry Construction Trust] did even less well. In the first 2 months of this year the indicators were still worse.

Among the causes of the lag are unsatisfactory supply of materials and poor quality in the engineering preparation of facilities. Moreover, some of the jobs are outside the republic. At the same time, a large amount of work is being performed at facilities that are not associated with the gas industry, matters going worst of all at Turkmengazprom Association facilities.

Turkmenneftegazstroy Association chief E. A. Runenkov confirmed in his speech the facts mentioned. He emphasized, at the same time, that neither is the client carrying out his commitments completely, especially for monitoring the preparation of the design and budget-estimating papers. Budget estimates often are changed, causing additional work. Because of this 250,000 rubles were expended above the budget estimates for Gaz-Achak, and even more work above the norms was done on the Mollaker-Turkmen Nitrogen Fertilizer Plant route. And, as a consequence, the deadlines for introducing the jobs were extended.

The builders have more than enough of their own problems. Such reserves for raising labor productivity as the wide use of piecework-plus-bonus pay, the brigade contract with use of the labor-participation coefficient, and advanced work methods are being used poorly.

Shatlykgazstroy Trust manager S. M. Leydiker spoke about the difficulties of his organization. While the plan for construction and installing operations has increased greatly, the production base is practically not being expanded. The repair shops are obsolete and cannot service all the equipment. And this leads to premature wear and the breakdown of expensive equipment. Seventy percent of the materials and equipment deliveries were being carried over at the end of the quarter. There were many difficulties with fuels and lubricants. Matters concerned with supplying the builders with housing were in bad shape. Experience suggests that in order to solve successfully the tasks set for this five-year plan, two prime contracting subunits must be created within the trust.

The builders have still another "sore" problem. For several years now, Turkmenneftegazstroy trusts have been practicing the "selective" method for the set of operations at gas-industry facilities. The contract is concluded without consideration of the fact that the client, for purposes of normal activity, must be provided with a stable technology for recovering and treating gas. Facilities are turned over with unfinished work, which is not eliminated for a long time. Director of the Order of Labor Red Banner Shatlykgazdobycha [Shatlyk Gas Recovery Association] V. S. Nazemkin spoke about this in particular at the conference.

One of the basic organizational questions today is that of assuring close mutual ties between client and contractor. Deputy USSR Minister of Construction of Petroleum and Gas Industry Enterprises M. Kh. Khusnutdinov, who spoke, emphasized that what is needed is mutual assistance, not mutual complaints. Incidentally, at many construction projects of some RSFSR oblasts, the movement under the motto, "From

Mutual Complaints to Mutual Assistance," is being promoted widely. It still has not received due attention in the republic.

Primary party organizations should monitor intensely the execution of measures to further develop the republic's gas industry, said V. F. Zhulenev, secretary of the Central Committee of the Turkmenistan Communist Party in his speech. It is necessary to develop and to carry out fully specific programs that provide for a balancing of plans with deliveries of materials and the training of personnel, to have detailed schedules of operations for each job, and to establish client-contractor contacts.

Only with common efforts and precise organization of production can successes be achieved in creating the fuel-and-power engineering complex called for by 26th CPSU Congress decisions.

11409
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WELL-REPAIR SERVICE BEING GIVEN GREATER CONSIDERATION

Moscow PRAVDA in Russian 1 Apr 82 p 3

[Article by S. Akhmadiyev, chief engineer of Tatneft' [Tatarskaya SSR Petroleum Production Association] and I. Yusupov, deputy director of the Tatar Scientific-Research and Design Institute for the Oil Industry (Tatarskaya ASSR): "As the Main Thing"]

[Text] The repair service's potential.

There is an important characteristic of the work of oilfield workers and of those who work at oilfield suport facilities. Until the development of an oilfield ends, as they say, it is riveted to the extraction-engineering structures--the oil wells. You do not transfer them, you do not transmit them. The oilfield workers cannot, as at other industries, quickly modernize or completely replace their fixed capital. Therefore, overhaul and current repair is of special importance in oil recovery.

The well-repair service is becoming that element upon which the introduction of new methods for increasing a formation's productive capacity and intensifying the yield of reserves depends. Geological engineering measures carried out by repair workers are, in essence, the basic elements for controlling the process of developing a field.

The repair service in the Tatneft' Association has already, since the end of the 1960's, been converted from an auxiliary service into the main thing. This process is also occurring today at West Siberian fields. And for the first time in the industry, specialized administrations for increasing crude withdrawal from the formation and for overhauling wells have been established in our republic. The amount of work they do is increasing steadily.

In collaboration with VNIIneft' [All-Union Scientific-Research Institute for Oil and Gas] and Kazan' Chemical Technology Institute workers, the collective of our regional institute, TatNIIneft' [Tatar Scientific-Research Institute for Oil and Gas], has done a large amount of scientific research and experimental oilfield work. Validation of the effectiveness of the discrimination method for sealing off water has been completed. This has enabled development of the basically new area of study of water-excluding compounds based on polymer materials and synthetic resins.

Repair time is reduced by the use of so-called express methods developed by our researchers and production workers. They are based on the method of excluding formation water without the involvement of underground equipment. In the field-testing stage, promising developments are being found for restoring the seal of casing strings, with the use of energy from explosions.

Repair-work effectiveness has been increased. But this does not mean that all reserves have been brought to bear. Our services are still managing to do only little more than half of the full amount of repair work. And it is unrealistic to count on an increase in staff, considering the work-force shortage. These questions recently were the topic of thorough discussion at a session of the Bureau of the Tatarskaya Oblast CPSU Committee, at which some problems of modern oilfield practice were raised.

The fact is that the forecast requirement for repair work for the Tatneft' Association alone will increase more than 2½-fold by the end of the five-year plan. And the number of operations for increasing oil withdrawal will increase severalfold. The missing capacity should be made good basically by raising labor productivity and work quality.

Unfortunately, the equipment on which oilfield support workers are now working is obsolete. Most of the labor-intensive operations have not been mechanized. Thus, round-trip speeds during well repair are half those achieved during drilling. The serial output of specialized assemblies for overhauling wells has not been arranged for in the country. Repair workers are compelled to resort to primitive masts of their own design and almost all labor-intensive operations are being performed manually.

Back in 1976 an All-Union meeting of Minnefteprom [Ministry of Oil Industry], Mingazprom [Ministry of Gas Industry] and Minneftekhimmash [Ministry of Petroleum and Chemical Machine Building] convened in the city of Oktyabr'sk, at which the main areas of technical progress in well repair were examined. The plan for scientific-research and design-development work to create new types of equipment and tools called for the serial output thereof back during the Ninth Five-Year Plan. However, for a majority of the units, the development work was stretched out.

It should be emphasized that many mechanisms and assemblies that were intended for the repairmen were obsolete while they were being developed. For example, Azinmash [Azerbaijan Scientific-Research Institute for Oil Machinebuilding] (Baku) and VNIIneftemash [All-Union Scientific-Research and Design-Development Institute for Oil Machinebuilding] (Moscow) undertook to improve certain assemblies that are now being used. But their "improvement" came down basically to the replacement of various components.

The solution of the problem, as we see it, is to radically reequip the oilfield support services and to create a complex of highly automated units and equipment based principally on different grounds, making use of industrial robots. The time has also come to replace metal with fiberglass-reinforced plastic in well structure. Aside from saving metal, this will enable well service life to be increased severalfold.

In most of the country's oil-recovery regions, the repair service has been transformed into such a factor as important as drilling in the realization of

liquid-fuel recovery palns. Let us go farther: overhaul technology is more complex than drilling technology. Therefore, the repair service should be on a par in its rights with well penetration. But it would have to start with improvement in the organization of production, planning and material incentives for the repairmen's work. Overhaul must be converted to a system for organizing work that is similar to that of the construction of new wells.

Up until now, scientific-research--the first principle of technical progress in any production work--is being done here by isolated and, at times, small random groups in various NII's [scientific-research institutes]. Groups of enthusiasts are not in a position to solve reequipping questions in integrated fashion. Oilfield workers long ago recommended that a unified coordination center or scientific-research and design institute be established within the industry. This would enable the use of highly effective developments, avoidance of duplication, and more purposeful conduct of research. The Minneftekhimmash system needs, it would seem, enterprises that specialize in output of the means for mechanization for repair workers.

Much is left to be desired in the training of personnel for our enterprises. There are no special courses in the program of higher and intermediate training institutions on well overhaul and increasing the productive capacity of formations. We are compelled ourselves to train specialists from among vuz and tekhnikum graduates. It would seem that the training process should be restructured to take production requirements into account.

In brief, well overhaul needs universal attention and the concern of production workers, scientific workers of the industry and of interdependent fields, and higher and intermediate educational institutions.

11409
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NEW DRILLING EQUIPMENT DESCRIBED

Moscow KRASNAYA ZVEZDA in Russian 4 Apr 82 p 4

[Article by N. Lesnaya: "Equipment for Explorers of the Depths"]

[Excerpts] One of the latest innovations for our explorers of the depths is a drilling unit which has been converted to hydraulic operation and is installed on a caterpillar-track medium power transporter. This compact, mobile, productive borehole is designed for search and core-drilling operations, drilling wells up to 150 meters deep. It is easy to control, fast and maneuverable. The specialists from the special design office were able to use not only the advantages of the transport base, its high-speed qualities for overcoming swamps and water obstacles, including while floating, but also created original drilling equipment with consideration for the progressive trends in domestic and foreign experience in the rigid framework of limited lifting capacity.

"The unit of exploratory drilling which has received the number UPB-100GT does not have analogs in world practice," says the head of the section of drilling machines of the special design office L. Shumov. "Its mobile rotator of drilling pipes with high supply drive significantly reduces the losses of time and expenditures of labor in the drilling process. All the main and auxiliary operations have been mechanized. The classic plan for drilling wells generally uses a winch to lift the pipes. We have replaced it with a reverse rotator which ensures high speeds in lowering and lifting the pipes. Together with the original safety elevator, it excluded from the drilling equipment the heavy and cumbersome pipe-turner. For the first time, a small and durable hydraulic drive drilling pump of new design has been developed for equipment of this class."

The new unit is equipped with a set of control and measuring apparatus which permits easy selection and maintenance of the optimal drilling regime.

Testing of the new equipment in the swampy difficult-to-reach regions of the Kola Peninsula, Polar Urals, Krasnoyarskiy Kray and Yakutiya indicated its high efficiency and reliability. The borehole was twice as productive as the series machine on the frame BSK2M2-100 which was previously adapted for drilling from all-terrain vehicles.

All the adjustment series of all-terrain model made by the Moscow experimental plant of geological-exploratory equipment and instruments of the association "Soyuzgeotekhnika" have successfully passed experimental operation.

The last self-propelled machine recently left the gates of the experimental plant. Series-manufactured drilling equipment will be produced by another plant. The Moscow plant is preparing for proving ground testing of the new generation of borehole.

The second modification of the unit was made on the basis of the skid tractor "Onezhets." Installation of the equipment on a more powerful base makes it possible to expand the area of its application. The tractor variant, in contrast to the all-terrain, can use a bulldozer blade to make its own road and prepare the platform for the well.

9035
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REVITALIZATION OF BASHKIR OIL FIELDS DESCRIBED

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 31 Mar 82 p 2

[Article by M. Gallyamov, chief engineer of the association "Bashneft'": "Second Breath for the Field"]

[Text] Those who have been at the Bashkir oil fields could be convinced that the extraction foremen are working with intensity and interest. Each of us understands well that it is becoming more difficult from year to year to maintain stable indicators on the old fields which frequentlyhave been basically used up. The field workers are nevertheless finding new reserves to attain high results. Here they are optimizing the well network, forcing the liquid recovery from them, and are improving the system of maintaining bed pressure.

These and other operations have been done and will be done in the future. But today there is an acute question of more intensive development of so-called oil reserves which are difficult to extract, or perhaps it is more correct to say that these are not very productive beds. There are many of these formations. This is explained fairly simply: first those reserves are extracted which it is easier to take. Work is slower on the most complicated sections, and is postponed altogether for an indefinite period.

Sooner or later, however, the "golden age" of any field ends and we have to work with the residual oil. It is not easy to do this. The oil beds in the depths are most often arranged in the form of a "layered puff pastry." There is a fairly intensive influx from the highly productive layers, while the beds which are less permeable and moreover generally have a lower thickness, do not show high activity. In addition, the oil in them is often viscous, and nonuniformly distributed, although it is often located fairly close to the earth's surface.

Is there sense in developing these formations? Practice makes it possible to answer this question affirmatively. The oil and gas extracting administration "Yuzharlanneft'" is successfully solving this task. Here the production engineers and scientists are working for a purposeful use of the oil reserves which are concentrated in the low-productive "intermediate" beds. As a result, a number of sections have doubled the extraction of fuel, and increased it 8-fold in individual wells.

It is common knowledge that every oil storehouse has its secrets which have to be guessed and more efficient extraction methods have to be sought. For

example, a group of specialists and scientists from the institute Bashkir Scientific Research and Planning Institute of the Oil Industry have succeeded in finding an original approach to working the Tuymazinskiy formations and substantiating the suggestions for intensifying extraction from the "upper block." The plan was highly evaluated by the Ministry of the Oil Industry. Of the 200 additional wells earmarked for drilling, almost half are already operating. Their average output today is the same as from the basic Devonian beds. Focal flooding is simultaneously being introduced at these same fields, and peripheral sections are being drilled out. Ten and more thousands of tons of oil have already been obtained from each well.

The coal levels which previously did not receive proper attention are being intensively worked. The customary viewpoints now have to be altered. It should be said that the efforts expended have been rewarded: extraction of fuel has doubled at a number of these sections. About 700,000 tons of oil were extracted last year alone from the Tuymazinskiy field from the formations that are difficult to work and are not very productive.

Thus, the old underground warehouses are acquiring a new life. According to our calculations, it will be a long one.

However, the measures that are now being taken to improve oil output from the difficult beds are clearly insufficient. More complete drilling out of the fields with a dense network of wells, the use of new production plans and working projects at times do not produce the expected effect. Thus, for example, we have not yet solved the problem of extracting oil from the so-called carbonaceous collectors where a lot of reserves of valuable fuel and chemical raw material are also concentrated.

One of today's most weighty reserves is the broader development of major well repair. What is happening now? The Bashkir fields have about 3,000 wells from which a lot of water and little oil is extracted. This means that the productive beds have been thoroughly worked. In such cases it is necessary to connect up those from which it is more difficult to extract oil.

In order to conduct this operation, the repairmen have to isolate the worked bed, filling it with cement or other material, and thus preventing water from entering the well. After this, another bed is opened which is located above or below the main bed. This work requires a lot of expenditures of time and labor of course. But if this major repair is successful, then a double advantage is gained: a new oil bed is opened for working and the expenditures of electricity to maintain the bed pressure are reduced.

We are conducting similar operations. But despite the obvious progress, the work is not going as quickly as it could. The main reason is that until now the major repair brigades have been poorly supplied with equipment. They need lifting mechanisms, pipes and tools. For a number of years, the sector institute VNIIOENG [All-Union Scientific Research Institute for Organization of Control and Economy of the Oil and Gas Industry] has not been able to complete development of standards for supplying the oil extracting enterprises with lifting units and other equipment. The enterprises have therefore had to do a lot with their own resources.

We have created a lot of low-mechanization equipment. The engineers and innovators of production from the same administration "Tuymazaneft'" in cooperation with the institute All-Union Scientific Research Institute of Oil Machine Construction have developed basically new designs for mechanisms for the repair brigades. Experience shows that their use yields a perceptible effect: repair is done with lower outlays of labor and resources, while most importantly, the extraction of oil from the renewed wells is enhanced. It appears that there is a direct sense in setting up extensive fabrication of equipment for mechanization of repair operations and thus noticeably increase their rates.

Today there is an especially great need for drilling units which can drill shallow producer wells needed at a number of fields to extract oil reserves which are difficult to extract. These units must be light, have high degree of installability so that they can be rapidly moved from one point to another. The drillers previously had machines BU-40 which were very convenient to operate. Industry no longer manufactures them for some reason. At the same time, there is a great need for them. For example, a few wells of depth 900 meters could be drilled at the Arlanskiy field. There is still a lot of residual oil at this level.

All of these questions, like the whole problem of difficult oil, evidently require the most serious examination in the Ministry of the Oil Industry and the planning agencies.

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GUIDEBOOK SYSTEMATIZES MATERIALS ON SUPERDEEP DRILLING

Baku VYSHKA in Russian 28 Mar 82 p 2

[Article by Z. Kravchinskiy, candidate of geological-mineralogical sciences: "Studying the Depths"]

[Text] We still have a poor knowledge of our planet. Its depths are not quite accessible to us. Penetrating into the depths of the earth with drilling rigs barely more than one-thousandth of its radius, we directly observe the real substance of the earth only in its most superficial layer.

At the same time, the great depths contain fields of the most valuable minerals, and hide inexhaustible energy sources.

The Soviet Union is currently successfully implementing a global scientific project to study the earth's crust and mantle using superdeep wells. The first-born of this deep probing was the unique Kola borehole which passed the 11-kilometer mark, and now its nearest goal is reaching the 15-kilometer limit.

A large order of science is being fulfilled at the Saatly well in Azerbaijan which is also targeted for 15-kilometer depth.

Drilling of the Kola and Saatly wells is an enormous achievement of Soviet drilling technology. Their successful drilling has entailed formulating a new long-term program for deep probing which stipulates drilling of 20 wells with depth from 7 to 12 kilometers in different regions of the country.

All of this made it necessary to somehow systematize the materials on superdeep drilling which are currently dispersed in different information sources. This creates great difficulties in the work of the specialists engaged in studying the depths.

The reference journal "Superdeep Drilling" prepared by the Institute of Geology of the Azerbaijan SSR Academy of Sciences fills this gap. This type of collection is the country's first information guidebook on the problem of superdeep drilling which contains vast information on all of its aspects.

The collection is equipped with an auxiliary author's index, additional reference material containing information on domestic and foreign superdeep wells and formations, and the condition of working out individual problems in various countries of the world.

The reference collection "Superdeep Drilling" is a necessary manual for a broad circle of specialists involved in this problem. It is exceptionally important for Azerbaijan specialists because the Saatly superdeep well is being drilled here and in the future vast sections of depression zones, as well as deep-sea offshore water areas will be explored and developed for oil and gas.

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NEW INSTITUTE ESTABLISHED FOR CONTINENTAL SHELF DEVELOPMENT

Moscow KOMSOMOL'SKAYA PRAVDA in Russian 18 Apr 82 p 4

[Interview with Doctor of Technical Sciences, Professor Rakhfat Akhmetovich Maksutov by N. Khlebodarov; date and place not specified]

> [Text] Moscow has set up a new all-union scientific research and planning-design institute for problems of developing the continental shelf, the All-Union Scientific Research and Planning-Design Institute of Offshore Oil and Gas. Our correspondent N. Khlebodarov converses with its director, Doctor of Technical Sciences, Professor Rakhfat Akhmetovich Maksutov.

[Question] Rakhfat Akhmetovich, what place does offshore oil and gas play in world energy? Why is there interest in the riches hidden under the sea floor?

[Answer] Today every fifth ton of oil in the total world extraction is offshore. By the end of the century, it will be every second. The numbers are fairly high, but the current rates of industrial development require this.

[Question] What are the main tasks that your institute has been called upon to solve?

[Answer] Our main task is to build up the discovered field: in the shoals this means to formulate plans for building dams, platforms and artificial islands, and at great depths, this means to provide self-lifting, floating and underwater equipment for offshore drilling, operation and transporting of the oil and gas to the land.

[Question] What is the specific nature of building these structures?

[Answer] Whereas on the land you can install any equipment, at sea, every square meter is worth its weight in gold.

We have to work in a new way at sea. Whereas on the land we can drill 10-20 exploratory wells and from them draw a conclusion on the outlook for the field, at sea, we have to obtain the same from 2-3 wells. The methods and tools for studying the depths must therefore provide complete information on

every drilled meter of rock. The information must be complete and clear, otherwise there will not be enough of any of the resources for exploring the fields and the oil itself will become too expensive.

[Question] Are these still plans or are there specific achievements?

[Answer] We have already made certain studies. Underwater diving equipment has been made so that man can operate at considerable depths. Plans are being developed for building artificial islands in the bays of Sakhalin Island, blocks for purifying drilling wastes, etc. Out main achievement is that we have coordinated work of several hundreds of organizations, the executors and co-executors who are developing about a hundred new types of equipment for offshore oil and gas extraction. Now the most important question is coordination of all scientific research and planning-design work and search for new ways to drastically intensify work to develop the oil and gas resources of the contintental shelf.

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BRIEFS

COAL EXTRACTION--The brigade of Hero of Socialist Labor A. Belikov from the mine imeni Bazhanov did not need a lot of time to "break in" the new longwall. The collective yesterday extracted the thousandth ton of coal above the plan since the beginning of the year. The collective is considerably indebted for this success to its leader whose signature is under the appeal of the delegates of the all-union congress of the trade union of coal miners to the sector workers to worthily meet the 60th anniversary of the formation of the USSR. Anatoliy Iosifovich has helped to turn the previously lagging brigade into one of the best in the association "Makeyevugol'." Although the face in which the brigade of A. Belikov is working is the deepest in the Donbass, the collective has been true to its word: under these harsh conditions, the daily extraction from the longwall in January regularly exceeds a thousand tons. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 20 Jan 82 p 1] 9035

NEW COAL FIELD--Chita, 28 April--The collective of the mine "Vostochnaya" has started developing the Tataurovskiy coal field. The crew of the walking excavator headed by G. Alekseyev dug the first bucket of strip pit rock. The crew is faced with reaching the coal beds which are at a shallow depth in a short period. The proximity of the roads and railroads, the good quality of the coal and the inexpensive open pit method will guarantee high efficiency of the extracting operations. The power engineers will receive the first hundreds of thousands of tons of coal already this year. [Article by outside correspondent of PRAVDA V. Smirnov] [Text] [Moscow PRAVDA in Russian 29 Apr 82 p 2] 9035

MINERS EXCEL--Donetsk, 2 May--The miners of the association "Donetskugol'" marked the May First celebration with a new labor victory. The national economy obtained from them an additional 319,000 T of fuel. The miners also used holidays in order to be successful. The mining administrations named after the newspapers PRAVDA and KRASNAYA ZVEZDA replaced the underground machines which had seen their day. More powerful conveyers were set up in the shafts of the mine imeni Zasyad'kov. The vertical shafts and mining equipment were repaired at all the coal enterprises. From the first working day in May the miners planned to broaden the competition even more in honor of the 60th anniversary of formation of the USSR. [Correspondent of PRAVDA I. Tikhomirov] [Text] [Moscow PRAVDA in Russian 3 May 82 p 1] 9035

FACEMAN ELIMINATED--The coal face can do without the faceman the scientists of the institute "Ukrniiugol'" believe. The hydraulic unit they made during the experiment in mine No 4 in Yenakiyevo extracted many hundreds of tons of coal without the presence of workers at the extraction site. A strong jet of water did it. Assembly of the first industrial unit "AGS" has been completed at the institute plant. Three of these units which will be made this year will comprise the equipment for the country's first unmanned hydraulic extraction at this mine. Several workers will be working each shift with output of 60,000 T per year. [Text] [Moscow KRASNAYA ZVEZDA in Russian 25 Apr 82 p 1] 9035

ABOVE-PLAN EXTRACTION--"Sixty intensive weeks for the 60th anniversary of the USSR" was the motto under which the miners from the production associations "Rostovugol'" and "Gukovugol'" competed. By highly productive use of the mining equipment and by using progressive forms of brigade organization of labor the collectives from the mines "Mayskaya," "Glubokaya," "Sokolovskaya" and imeni 60th anniversary of the Leninist Komsomol "Donetskaya" achieved excellent results. The miners of the association "Rostovugol'" and "Gukovugol'" have extracted almost a half million tons of anthracite above the plan since the beginning of the year. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 25 Apr 82 p 1] 9035

ADDITIONAL COAL EXTRACTION--The miners of the seventh section from the mine "Vorgashorskaya" extracted an additional 25,000 T of fuel since the beginning of the year. The section is headed by G. Yashenkov. The leading collective is 2 weeks ahead of the production schedule. They currently extract 200-300 T of fuel more than the daily assignment every day, and the load on the face has exceede 2,500 T. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 13 Apr 82 p 1] 9035

ENRICHMENT PLANT-- Yakutsk, 28 Mar--Up to 9 million tons of coking coal per year will be reprocessed by the South Yakutsk coal complex enrichment plant, a new construction project of the current five-year plan. Now the structural parts for the main buildings are being installed here. The brigade from the trust "Dal'stal'konstruktsiya" which is led by F. Moroz, has mastered the progressive method of installing enlarged blocks. [Article by outside correspondent of PRAVDA V. Tarutin] [Text] [Moscow PRAVDA in Russian 29 Mar 82 p 3] 9035

KUZBASS COAL OUTPUT--Novokuznetsk, Kemerovskaya Oblast--The brigade of Hero of Socialist Labor Mikhail Reshetnikov from the mine "Zyryanovskaya" extracted the five hundred thousandth ton of coal since the beginning of the year. This productivity has been reached for the first time in the Kuzbass. The collective is extracting the coal with two mechanized faces, producing over 4,500 T of fuel every day. [Text] [Moscow IZVESTIYA in Russian 24 Apr 82 p 1] 9035

ELECTRODE COKE---The oil refinery in Krasnovodsk has started to manufacture electrode coke for the metallurgists. A complex with annual output of 600,000 T of low-ash fuel has been started up. The operators who took up the relay baton from the builders have been committed to bringing the new production to the planned mark ahead of schedule. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 1 Apr 82 p 1] 9035

COAL OUTPUT--Our brigade has adopted the socialist commitment of extracting 600,000 T of coal per year in honor of the 60th anniversary of formation of the USSR. By 1 May we had already accomplished half of the promise. By Kuzbass measure we have standard conditions: there were geological disorders, and the high mine pressure is cause of great concern. The success is therefore determined by the skill of the people who are masters of the modern equipment. It is pleasant to admit that in our brigade we can boldly include every worker in this category. I stress this circumstance primarily because four-fifths of the collective are young workers. They already have a solid knowledge of their work and you can count on each one of them. I am already

at retirement age. But I am still strong and have the desire to work. There are other veterans working with me who generously transfer their knowledge and experience to their young comrades. I would especially like to single out the team of Anatoliy Kusakin: to compare with them means to always be ahead. This is why our brigade has over 50,000 T of fuel in the above-plan account. We are trying to double this account in honor of the glorious anniversary. [Article by Ye. Drozdetskiy, brigade foreman of the mine "Nagornaya," Hero of Socialist Labor] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 5 May 82 p 1] 9035

YAKUTIYA COAL OUTPUT--The miners of the Neryungrinskiy open pit in Yakutiya extracted the millionth ton of coal since the beginning of the year. They reached this limit almost 2 months earlier than last year. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 17, Apr 82 p 3] 9035

KUYBYSHEV CRUDE RECOVERY--Kuybyshev--Today V. Sinyakov's brigade of Kuybyshevneft' [Kuybyshev Oil Production Association], which is servicing oil wells in the area of the city of Zhigulevsk, is recovering the 800-millionth ton of black gold since industrial development of the oblast's fields started. Right now the association's 30,000-man collective is working 82 fields. More than 3,700 wells are producing crude. The Order of Labor Red Banner Kuybyshevneft' production association was awarded the challenge Red Banner of the CPSU Central Committee, the USSR Council of Ministers, the AUCCTU and the Komsomol Central Committee, with inscription on the All-Union Honor Plaque at the VDNKh SSSR [USSR Exposition of Achievements of the National Economy] for successes achieved in 1981. The collective has committed itself to recovering 100 million tons of natural fuel during the 11th Five-Year Plan, which is 770,000 tons above the plan. The Kuybyshev Association has become a singular experimental base for the country's whole oil industry and a forge for personnel of new oil-recovery regions. In West Siberia, at Mangyshlak, and in the Ukraine and Udmurtia and other regions one can meet masters of drilling and recovery who gained knowledge and experience at Volga oilfield facilities. [By A. Vorob'yev] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 28 Mar 82 p 2] 11409

SHURTAN GAS FIELD POTENTIAL--Shurtan, Kashkadar'inskaya Oblast--Four billion cubic meters in a year--this is the increment that the second phase of the Shurtan field will give to Uzbekistan's natural-gas recovery. The installation of operating equipment has been completed here, and the set-up men have begun to prepare it for startup. Sredazneftegazmontazh [Central Asian Trust for the Installation of Oil and Gas Industry Facilities], using the consolidation method for prefabricating components and assemblies, has installed operating equipment well ahead of schedule. Not much time at all remains before the moment when the command "Start!" will be sounded. And gas from the underground storehouse will pour into the Central Asia pipeline system, going to industrial enterprises and power stations. At the complex only a small detachment of operators will remain, for the builders and installers will transfer to a neighboring site. Shurtan has a great future: the largest fuel and power base of Uzbekistan is being created here in the Karshinskaya Steppe. Right now the explored gas reserves of the Shurtan field exceed 500 billion cubic meters. During the five-year plan natural-gas recovery will increase from 4 to 18 billion cubic meters per year. [TASS] [Text] Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 20 Jan 82 p 1] The Shurtan gas complex's second phase has been put into operation. The new capacity will enable gas recovery and treatment

to be doubled--from 4 to 8 billion cubic meters per year. The operating workers intend to introduce the installations at design-capacity ahead of time, thereby sending customers hundreds of thousands of additional cubic meters of the "blue" fuel" above the task for the year. [TASS] [Text] [Moscow STROITEL'NAYA GAZETA in Russian 5 Feb 82 p 3] 11409

NEW GUSHER AT ZHANAZHOL--A high-capacity gusher has struck from the 3,800-meter level of the Zhanazhol field in Aktyubinskaya Oblast. The prognosis for the existence here of a second oil-bearing horizon has been completely confirmed. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 28 Mar 82 p 1] 11409

DERRICKLESS DRILLING--There are fewer openwork derricks which are customary to the oil worker's eye in the shops for oil and gas extraction of the oil and gas extracting administration "Leninneft'." The permanent production conference of the administration has become the initiator of the transfer of wells to the derrickless method of operation. The solution was made after all the repair brigades had mastered the new equipment. Now they are helped by the powerful unit "Bakinets." It unfolds its portable derrick above the pumping jack in only 30 minutes. After several hours, oil gushes and "Bakinets" hurries to a new place where the pipe has become thin or something has happened to the pump. The permanent production conference of "Leninneft'" is involved with the most diverse problems of extracting and yielding the fuel. By its recommendation, six wells have been switched from the compressor to deep-pump method of operation. This conserved about 5,000 m^3 of compressed air last year. Serious shifts have occurred in the oil pumping shop. Here there has been an improvement in the regime for purifying the fuel with chemical preparations and work has been optimized for boilers to heat the extracted oil. Over 2 million kilowatt-hours of electricity, about 400 T of conventional fuel have been conserved and 80 efficiency experts' suggestions have been introduced in 1981 and in the first 2 months of this year because of decisions adopted by the permanent production conference in the administration. [Text] [Baku VYSHKA in Russian 28 Mar 82 p 4] 9035

NEW GAS FIELD--Korpedzhe, Turkmenskaya SSR, 9 Apr--A new glue fuel field has been discovered at the explored area here which is located in the southwest of the republic. Industrial gas supplies have been obtained from the first exploratory well. Drilling of the well is continuing. Several more deep wells will soon be drilled here to determine the boundaries of gas occurrence. This year, the explorers of the depths of the association " urkmenneft'" disovered new oil and gas formations also at the fields "Keymir" and "Vostochniy Cheleken" in the west of the republic. There is a promising search on the area of Sabur in the central Karakumy. Oil was obtained from testing well No. 2 from a depth of 2,800 meters. [Article by A. Yezerskiy, colleague of the Krasnovodskaya Oblast newspaper ZNAMYA TRUDA] [Text] [Moscow PRAVDA in Russian 10 Apr 82 p 3] 9035

NAPTHALIN INSULATION--An insulating coat made of naphthalin for oil wells has been made by the Azerbaijan scientists. Steam or hot water is usually injected into the depths to displace the oil from the beds. However, in the well shaft they lose roughly 70 percent of the heat. This reduces the effect. The scientists from the institute "Aznipineft'" have suggested that two pipes be placed in the well to preserve the heat. One is inside the other and the space between them is filled with some type of porous substance and filled with liquid naphthalin. When steam or hot water pass through the pipe, the naphthalin is evaporated and a gas screen is created which prevents their cooling. Calculations of the economists indicate that the development of

the Azerbaijan scientists will conserve R 100,000 per year for each injection well. [Article by V. Korsh, correspondent of TASS] [Text] [Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 6 Apr 82 p 3] 9035

VOLKOV OIL OUTPUT--Ufa, 2 May--The Volkov oil field is the youngest in Bashkiriya. Although it is only a year old, there are 25 wells already in operation here. "Black gold" is extracted at this new field by the Komsomol youth brigade of the communist Nail' Bakiyev. It has successfully completed the May 1 work watch: the daily plan for oil extraction was covered by 200 T. The administration "Ufaneft'" received these reports by the end of the day not only from Volkov, but also from the distant fields. At the Buzov'yazovskiy, Kushkul'skiu, Uzybashevskiy fiellds 50 T of oil above the plan have been extracted in the past days. The head of the oil and gas extracting administration "Ufaneft'" M. Al'Khamov said: "We overfulfilled the May 1 daily assignment by 417 T of oil, and since the beginning of the year we have extracted 41,000 T above the plan. The extractors of 'black gold' of the republic are marking a great event in May, the 50th anniversary of Bashkir oil. The administration will produced 5,000 T of oil above the plan by this remarkable date." [Article by outside correspondent of PRAVDA Ya. Khusainov] [Text] [Moscow PRAVDA in Russian 3 May 82 p 1] 9035

GAS FIELD OPENS--Tashkent--The largest gas field of Uzbekistan, Shurtan, which has been explored in the Karshisteppe has been opened. This underground storehouse stores about 500 billion m^3 of fuel. It contains many valuable components for the chemical industry. The field is located only 20 kilometers from the oblast center of Karshi. This facilitiates its working and permits setting up of watch maintenance of the fields. It is planned in this five-year plan to bring the annual gas extraction in Shurtan to 16 billion m^3. [Text] [Moscow GUDOK in Russian 30 Apr 82 p 1] 9035

WELL RESTORATION--All 14 brigades of the shop for major well repair of the oil and gas extracting administration "Ordzhonikidzeneft'" have been included in the competition for a worthy meeting of May 1. Since the beginning of the year, 63 wells have been restored at the oil fields. This produced an additional 100 T of fuel. The competition is led by the brigades of foremen Tair Veysalov, Rzakhan Bukhsayev and Pavel Dzhoyev. [Article by R. Askerov, operator for oil extraction], [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 20 Apr 82 p 1] 9035

MANGYSHLAK OIL--The underground storehouses are being worked at accelereated rates by the collective of the association "Mangyshlakneft'." The 25,000th ton of raw material above the plan since the beginning of the year was sent to the refineries. The success was achieved despite the unfavorable weather conditions. In order to maintain the necessary pressure of the oil which becomes fluid only at a temperature of plus 32°, hot water had to be injected into the well. Using this technology, not only was the output of the old wells increased, but the yield of the new ones as well. During the intensive watch in honor of the 60th anniversary of the USSR, the Mangyshlak field workers produced tup to 250 T of above-plan product daily. [Text] [Moscow IZVESTIYA in Russian 11 Apr 82 p 2] 9035

GUARANTEED REPAIR--"Plan ahead of schedule with guaranteed repair" was the motto for the intensive watch in honor of the 60th anniversary of the formation of the USSR for the collective of underground well repair of the association "Makatneft'" headed by foreman A. Bermagambetov. This year, the leading collective repaired over 70 wells with high quality. This permitted the field workers to extract about 50 T of oil in addition to the assignment. The success was achieved because of the use of leading technology in the repair and skilfully organized socialist competition. [Article by B. Glotov, in-house correspondent] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 13 Apr 82 p 1] 9035

CSO: 1822/164

PIPELINES

OFFICIALS ANSWER PIPELINE CONSTRUCTION QUESTIONS

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 5, May 82 pp 114-120

[Interview with pipeline construction officials by Ye. Koshechkin; date and place not specified: "Questions Await Their Resolution (oil and gas pipeline construction)"]

[Text] Nadym, Urengoy, Hamburg. These are on both sides of the North Pole. Industrial development of natural resources of the Transural region has advanced to the threshold of the northern Arctic Ocean. The foundation is now being laid here for the country's energy base. At the November (1981) Plenum of the CPSU Central Committee, L. I. Brezhnev named the central construction projects of the 11th Five-Year Plan as construction and start-up of six of the largest main gas pipelines West Siberia-center of the country, including the export Urengoy-Uzhgorod.

The gas pipeline Urengoy-Gryazovets-Moscow is already in operation (extent about 3,000 km). Construction of another Urengoy-Petrovsk has been completed (3,000 km). Laying of another two simultaneously has begun: Urengoy-Novopskov (3,600 km) and Urengoy-Uzhgorod (4,600 km). At the end of the five-year plan, the next two will be opened. About 1,000 km of each gas pipeline passed through the Tyumenskaya Oblast, which has been given a primary role in implementing the strategic task, providing the national economy with energy raw material. In the current five-year plan, it remains to increase gas extraction there from 156 to 356 billion m^3, oil (with gas condensate) from 303 to 386 million T. The state is spending enormous resources on this: the capital investments will more than double as compared to the 10th Five-Year Plan.

The responsible workers of the party, soviet, Komsomol, economic agencies concentrated in the Tyumen' held a round table discussion of how to consume and how to use with the greatest benefit material and other resources, in particular for the construction of main oil and gas pipelines. This report was included in No 4 (1981) of the journal PLANOVOYE KHOZYAYSTVO. Responses to the publication were received from the Ministry of the Oil Industry, Ministry of the Gas Industry, Ministry of Construction of Oil and Gas Industry Enterprises, USSR Gossnab, and USSR Gosplan which gives serious importance to the questionsdiscussed at the meeting, and report about measures aimed at their solution.[1]

[1]See: PLANOVOYE KHOZYAYSTVO, 1981, No 9, 10, 12.

It was necessary, however, to continue the started conversation. The expediency of this move is confirmed by the results of the interview held in the name of the journals PLANOVOYE KHOZYAYSTVO, KHOZYAYSTO I PRAVO, MATERIAL'NO-TEKHNICHESKOYE SNABZHENIYE, and SOTSIALISTICHESKIY TRUD in Tyumen' in the beginning of March 1982.

The notes taken make it possible to reproduce the viewpoints and positions of the participants on the following questions.

[Question] What are the changes which occurred during the year from the moment of the round table meeting in 1981? How is the problem of conservation of pipe and other materials in construction of main pipelines being solved today?

[Answer] B. S. Trofimov (head of the department of the Tyumen' CPSO obkom). There are changes. With our rapid rates there could not help but be changes. Some tasks have been solved and new ones have developed. But there are old tasks which we have to focus attention on. One of them is elements of poor management. Here are some examples. After the end of work on the gas pipelines Urengoy-Chelyabinsk, Urengoy-Gryazovets, Urengoy-Petrovsk the organizations of the Ministry of Construction of Oil and Gas Industry Enterprises did not involve about 23 km of large-diameter pipe in the economic turnover.

Delays in the end of construction of reserve branches on previously constructed oil pipelines Ust'-Balyk-Kurgan-Al'met'yevsk and Usp'-Balyk-Nizhnevartovsk did not make it possible to use about 3 km of pipes. They have been lying unmoved for several years.

The reason for poor management is hidden in calculations of planning and supply, in poor responsibility for preservation of materials. Sometimes the organization of material and technical supply of the Ministry of Construction of the Oil and Gas Industry Enterprises supply pipes of unnecessary assortment and in a quantity that creates surplus reserves. The planning organizations of the customer ministries do not always provide timely, 2 years before the beginning of construction, information regarding the needs for pipes according to diameter and thickness of walls. There is practically no responsibility for preservation of the pipes by the organizations of the Ministry of the River Fleet. In a number of cases they are unloaded independently on unequipped and flooded platforms. The administrations for production-technical set-forming of construction trucks take upon themselves responsibility for preservation of the freight, without exhibiting the proper exactingness towards the enterprises of river and railroad transportation for their breakage and damage during incorrect storage. Damages are not always corrected, and sometimes the pipes are not used according to their purpose. Violations are permitted by the leaders of construction and operating organizations when material responsibility of the drivers who did not supply or who supplied damage pipes is removed, as well as for a surplus of pipes at the installation site.

As you see we have something to think about, about what reserves we can actuate in speaking about conservation of materials.

[Answer] Yu. I. Sanin (deputy chairman of the Committee of People's Control for the Tyumenskaya Oblast). We have information about the results of a verification of pipe use on oil and gas pipelines. In 1980-1981 over 10,000 km of transport trunklines were examined. I can say what was done: 92 km were lifted from the water, 1,430 were hauled from flooded zones, 3,343 km were restored and 161 km of pipes were also collected from the route. A number of construction organizations have seriously instilled order in pipe use. Material responsibility has been strengthened, in particular of the driver for guaranteeing their preservation and shipping. However, as a whole, work to eliminate shortcomings in this matter is far from completion and control of it cannot be removed from the agenda. Strict accounting must prevent squandering of state resources. Today the total volume of pipe shipments is determined by the ministry, but who specifically receives them, and at what section of construction they actually arrive is not clear. The lack of a precise address, and lack of personal responsibility for the shipments is becoming the cause of negligence.

Today there are no bases which are properly supplied for receiving pipes in Urengoy, Ser'gino, Tobol'sk and other points. They are being equipped, but slowly. They are often built without consideration for the resources intended for other purposes. And how many of these bases should there be? It is unknown. The institutes should compute. Today the pipes are unloaded where it is more convenient, and the builders do not always remove them on schedule. What is the worry they say? The pipes will not go anywhere, and it is not easy to simply remove them, especially in summer. The construction of bases requires capital investments. However solution to the question of their allocation is being prolonged without substantiation.

[Answer] V. V. Zaychenko (head of the Tyumen' Main Territorial Administration of the USSR Gossnab). One of the ways to prevent loss of materials is to include in the staff of the reception commission a representative of our administration. We are interested more than other specialists in preserving material resources. We would not sign a certificate for starting up an object until all the remaining unused pipes are removed.

Other ways to stipulate in the plans for construction of objects of oil and gas pipelines a section for organization of material and technical supply. It should reflect the geography for supplies, a sample plan for influx of the main materials. The draft should have a section on constructing large warehouse complexes at the sites of concentration of construction. They can be created by percentage participation in the interested ministries. Materials are now stored at open poorly equipped platforms, are damaged, removed from their sets, and then stolen.

Today over 50 percent of the metal, 90 percent of the pipes, and almost 60 percent of metal items are obtained by the builders through ministries, by-passing the supply administration. We do not always know what specific product the central boards are acquiring. We only know the total quantity. This impairs control of correct use of resources.

[Question] From what has been said one can draw the conclusion that the builders receive pipes and other materials more than they need. Despite this they remain on the routes after work has been continued, and continue to lie in places of disorderly unloading, become unsuitable during transporting and poor storage, the production plans are fulfilled or overfulfilled. In all of this there is a conventional standard for additional consumption of pipes per 1 km of laid pipeline, several tenths of a percent depending on the complexity of the route. If the route is rectified, then fewer pipes are required, and an unused residue is formed. This makes it possible to cover all the consequences of poor management. Of course, it is necessary to instill order in the calculation, in the recording of pipe consumption by fact, and not by standard. But this may not alter the attitude of people to work, or remove responsibility from the officials for poor management.

This forces us to think and to strive to find out: what is nevertheless being done for wise use of the above-standard remains of pipes and other material valuables?

[Answer] B. S. Trofimov. In fact, the pipeline route is being changed for different regions, most often it is being rectified and shortened. The existing situations stipulate consumption of 1,008 m of pipes for each kilometer of route. Of course, it is also necessary to take into consideration the actual expenditures. The difference between the planned and actual consumption is not taken into consideration. It is extremely necessary to instill order in this.

[Answer] G. K. Alpatov (deputy chairman of the interdepartmental territorial commission for questions of developing the West Siberian oil and gas complex under the USSR Gosplan). The commission which I represent was recently created in the summer of 1981. But already at the second meeting of the year it adopted a decision to involve in the economic turnover pipes of oil and gas assortment which have been stored for a long time in the organizations of the Ministry of Construction of Oil and Gas Industry Enterprises. According to the presented reports for two central boards alone, the Central Board for Siberian Pipeline Construction and Central Board for Tyumen' Pipeline Construction, the presence and planned influx of pipes before the end of 1981 makes it possible to cover the construction program for 1982. The commission therefore asked the USSR Gosplan to prevent the Ministry of Construction of Oil and Gas Industry Enterprises from using pipes which will be supplied in 1982 for construction of pipelines. Those which have already arrived should be involved in the turnover. Realization of this solution proposes inclusion into the report (form 2SN) of indicators of the availability of pipes welded into the branch but not given to the customer. In addition, the USSR Gossnab has proposed examining a question of organizing pipe supply to construction sites of the oil and gas complex in West Siberia. We have in mind the creation of accumulation bases in the northern regions of the complex and the issuing to builders of pipes only according to the volume of construction in the planned period in accordance with the approved title list and with regard for the transitional residues. The Scientific Research and Planning Institute of Planning and Standards under the USSR Gosplan can pinpoint and review the active standard for pipe reserves in the construction organizations.

Another step should be taken: the Ministry of Construction of Oil and Gas Industry Enterprises should make a one-time inventory in all the pipeline construction organizations of West Siberia and sorting of pipes of the past years and to instill order in the bottom calculation and the recording. Unfortunately not all the suggestions of the commission have been realized yet.

It remains to be hoped that they will be rapidly implemented.

[Answer] N. I. Kurbatov (head of the Central Board of Siberian Pipeline Construction). I believe that realization of the basic materials, for example, metal, through the bases of the USSR Gossnab to a considerable measure would eliminate the developing problems. The availability of bases which have a different assortment of materials would not force the construction organizations to create "buffer" reserves which are often made to compensate for irregular supplies. Existing plan of supply with several reloadings of the freight on the way only extends the delivery time, and causes damage. It seems to me that this is one of the ways for decreasing above-standard reserves.

There is another aspect. We issue pipe orders much earlier than the planning-estimated documents for construction. When the pipes arrive, it is found that some of them are not the right size. In this case we select those suitable for the project, and the others become above-standard. Take 1982 for example, the first quarter is ending and delivery is still continuing. This is how surpluses are formed.

[Answer] V. V. Zaychenko. Uncalculated residues of R 4.8 million were revealed on 1 January 1982. This is not only pipes, but also lumber materials, glass, cement, etc. Their appearance could be prevented by strict accounting by the consumers, regulation of the supplies by transit, from the bases of the Tyumen' central board for supply, and by involving surplus resources in the economic turnover. In 1981 this method was used to involve material values for a sum of R 11 million. It is obvious that above-standard reserves intensify the losses. But order is gradually being imposed. Side sales are being curtailed. We add this so that the procedure for distributing surpluses will become controllable, monitored by the central board for supply. Then one could raise the question of reviewing the standards for reserves which are set according to the nomenclature of the USSR Gossnab.

[Question] Struggle for conservation and for the efficient use of all types of resources in construction depends a lot on the smooth operation of the central boards. In the system of the West Siberian complex, there are a dozen and a half of them, and interruptions in one production link influences the development of an entire complex.

How is departmental separation in planning the construction of objects of oil and gas pipelines, building up fields, laying roads, and in the construction industry of West Siberia in general being overcome?

[Answer] S. S. Stroganov (deputy head of the department of the Tyumen' CPSU obkom). This separation exists. Take for example, 20 main administrations of 10 different ministries and departments were involved in the buildup of the

Urengoy gas condensate field, i.e., municipal construction, erection of power engineering facilities, transportation and communication. The Ministry of Construction of Oil and Gas Industry Enterprises created yet another subdivision, the Main Administration for Urengoy Gas Construction. It had a positive goal in this, improving the structure of control. However, complexity is the efficient combination of departmental and regional interests, precise organization of planning capital investments and material-technical resources, rapid development of long-term questions of comprehensive development of the northern gas-condensate region of the Tyumenskaya Oblast. The interdepartmental territorial commission for questions of development of the West Siberian oil and gas complex is actively working on resolution of these questions.

[Answer] G. K. Alpatov. One of the main tasks of the commission is to guarantee interaction of all subdivisions participating in the creation and development of the West Siberian oil and gas complex. The main tool in this case is a plan correlated with sector and territorial features for solving national economic tasks. It is not simple to achieve this correlation however. It is complicated by the fact that until now it is not clear what actually is the West Siberian oil and gas complex, what is its composition and territorial boundaries, what is the order for planning its development and what distinguishes it from planning the activity of the same ministries and departments in other regions where similar sectors have not been united into complexes.

In the opinion of the commission, the West Siberian oil and gas complex is an interrelated set of enterprises, organizations, institutions concentrated on the territory of the Tyumenskaya, Tomskaya and Novosibirskiy Oblasts and implementing:

geolgoical exploration; well drilling; oil and gas, gas condensate extraction; primary preparation, processing and transporting of these products; generation and transmission of heat and electricity; production of oil and gas field and drilling equipment, construction machines and mechanisms, their major repairs; capital construction; fabrication of materials, including construction, for the needs of the complex; shipping national economic freight, material-technical supply of the listed operations; training of workers and engineering-technical workers; scientific-research and planning-research operations associated with exploration, extraction, transporting of oil, gas, gas condensate and capital construction.

Thus, all the enterprises of the Tyumenskaya and many Tomskaya and Novosibirskaya Oblasts are participating in the development of a complex, and consequently, are included in it. However, there is the opinion that the set of enterprises, organizations and institutions participating in the development of the complex is one, while the composition of the complex is another, i.e., it includes only part of these enterprises, organizations and institutions. But in this case one should ask: does the commission have the right to be involved with sectors not included in the oil and gas complex? Are the latter obliged to consult with the commission on questions associated with their participation in the development of the complex, to report about fulfillment of plans of their activity, and to fulfill or at least take into consideration recommendations and solutions of the commission which concern their activity in the complex?

The active statute on the commission does not provide an unequivocal answer. According to the statute, all the suggestions of the commission are sent to the USSR Gosplan which solves their further fate: diverts, takes into consideration, brings to the ministries, issues orders or decree, etc. This procedure delays the periods for solving the urgent problems.

We believe that our suggestions on questions of the activity of local organizations should be sent directly to the ministries, and only to the USSR Gosplan when a decision should be made by the USSR Gosplan, USSR Council of Ministers or in another established order.

One does not have to go far for examples. After examining in December 1981 the existing order for supplying fuel gas to the Surgut GRES, the commission noted that five organizations are involved in this, plants of the association "Sibneftegazpererabotka," Administration for Transporting Gas and Liquid Hydrocarbons (Ministry of the Oil Industry), the association "Tomsktransgaz," "Surguttransgaz" and Surgut Office of Gurgaz (Ministry of the Gas Industry). It was impossible to achieve coordinated actions, especially in emergency situations. The commission considers it expedient to unite the management of these two ministries and to impose commitments for gas supply on the administration for transporting gas and liquid hydrocarbons of the production association "Sibneftegazpererabotka," (All-Union Production Association "Soyuzneftegazpererabotka" of the Ministry of the Oil Industry). As yet we have not received any answer to our suggestion.

There is a second example. Based on the products of refining casing-head gas at the plants of the Ministry of the Oil Industry, one could set up production of automobile gasoline by methods of compounding or ethylation, and abandon shipment from the oil refineries of 2,000-3,000 T of gasoline. Unfortunately, no ministry has answered our recommendation to use this raw material which has still not found a market because of transportation difficulties.

Material and technical supply of the complex is one of the most acute problems. However, the commission is not involved in this question, and the working apparatus has not stipulated a subdepartment or specialist of this profile. At the same time, organization of a subdepartment for planning material and technical supply would promote the development of supply bases, improvement in organization of control of supply, more efficient use and maneuvering of resources within the oil and gas complex, and the development of norms and standards for their consumption.

[Question] The West Siberian oil and gas complex has not yet succeeded in achieving the necessary proportionality in industrial and civil construction, production and social infrastructure because of departmental separation. What this leads to is graphically visible in the example of the development of Surgut.

Economic and geographical situations of the city as the center of the oil and gas territory, major transportation and energy center has governed its intensive growth. On 1 January 1982 the population of the city was 150,000. It holds a concentration of over 400 enterprises and organizations and 28 ministries and departments. The Ministry of the Oil Industry, Ministry of

Construction of Oil and Gas Industry Enterprises, and Ministry of Power and Electrification are responsible for 29.6, 23.3, and 11.2 percent, or two-thirds of the total population of workers in the city.

The Ministry of the Oil Industry is the single customer for construction. Actually construction is done by 26 customers for individual microregions. Therefore questions of engineering preparation of construction, engineering support and public welfare have not been solved in an integrated manner. Temporary solutions for engineering support of the microregions caused additional capital investments for a sum exceeding R 30 million.

Accelerated development of the social infrastructure has become urgent.

Serious difficulties for the normal functioning of the city are created by departmental separation of the communal services. They are serviced by 20 organizations (5 of the Ministry of the Oil Industry with personnel numbering 2,140; 4 of the Ministry of Construction of the Oil and Gas Industry Enterprises with a staff of 950, etc.). Municipal water intakes are used by organizations of 13 departments. Construction and operation of boiler and main heating networks are also done by different departments without precise coordination of their actions both on the part of the customer (the association "Surgutneftegaz" and the municipal ispolkom of the Soviet of People's Deputies. As a result, resources are scattered, objects of heat supply are not built in time, heat is nonuniformly distributed over the microregions and even houses. Eight systems of worker supply of different ministries provide retail trade and public nutrition in the city, except for the consumer cooperation. The trade facilities of the Ministry of the Gas Industry, Ministry of the Oil Industry and Ministry of Construction of Oil and Gas Industry Enterprises have model designs (13 percent), while objects of the other ministries are built-in and adapted rooms. Sixteen departmental stations implement telephone communication in the city.

These facts indicate that the departmental separation involves scattering of labor resources. According to the calculations of the Tyumen' Department of the IE i OPP [expansion unknown] of the Siberian Department of the USSR Academy of Sciences, centralization of control of residential-communal services, trade and communications in Surgut will conserve R 60.7 million of capital investments and release 2,250 people.

Overcoming lack of coordination in the actions of different departments within the oil and gas complex is a large independent question. We hope that the advanced suggestions will promote its resolution.

The labor resources are perhaps the most important factor of construction industry. Under Siberian conditions, the expedition-watch method is widely used. What prevents its dissemination on the routes?

[Answer] B. S. Trofimov. The expedition-watch and watch method of construction under the harsh conditions of the north have not yet found a replacement. The fact is that it is economically inexpedient to erect cities and settlements on the fields for constant living. Watch settlements are built on the fields

with a set of buildings for work and recreation. The workers are shipped here by automobile or aviation daily or once every 7-10-12-15 days from the base cities in the oblast.

The expedition-watch method has a somewhat different regime. I indicated a year ago that this method is justified on the national economic level since the expenditures are covered by the results. However, in the framework of individual enterprises, we see a different picture. I will cite one figure: in 1979-1981, expenditures for shipping people for only two central boards, oil and gas and geology, exceeded R 40 million. For these resources we could have built over 100,000 m^2 of housing.

It is also necessary to consider that shipping people great distances disrupts the steady-state rhythm of human life. People arrive to work from Belorussia, from the Caucasus, from the Volga region. Coming from one climate and time zone to another, where temperature drops reach 50°C, it takes them a long time (2-4 days) to become acclimated. Labor productivity diminishes. Both from a medical and economic viewpoint, these movements also raise questions. Therefore the expedition-watch method should be used in exceptional cases and in combination with the watch method.

[Answer] A. K. Bondarenko (deputy head of the Central Board of Siberian Pipeline Construction). The Central Board for Siberian Pipeline Construction has given its consideration regarding the watch-expedition method. We believe that it is inapplicable for builders of pipelines in West Siberia for the following reasons: laying of a pipeline is a continuous stream which involves 300-500 people. It is impossible to immediately replace them, i.e., the watch. The weather-climate conditions interfere with precise delivery of the shift by aviation. The idling time from this is fairly great. The base settlements would require doubling of the housing fund in order to receive the main and the shift watch. The principles of cost accounting will be violated since one shift, without having completed the work, leaves, while the other corrects "other people's" unfinished projects. The smooth system of operation of the start-to-finish brigades would have to be broken. A production base would have to be set up for housing construction in the inhabited zone. The customer and planning institutions do not stipulate expenditures for transferring people in the estimates for construction.

Subdivisions of the central board have accumulated experience of using another method, two-shift work with total calculation of working time. It makes it possible in the most favorable season, from November through April, to have round-the-clock operation of powerful equipment and efficient use of personnel.

[Answer] G. K. Alpatov. The USSR State Committee for Labor jointly with the interested ministries must pinpoint the possibilities of using the expedition-watch method, and prepare standard-legal documents which regulate organizational work.

[Question] A large question which predetermines the smooth use of equipment is the supply of builders with spare parts, and increase in the output of the repair base. What should be said about this?

[Answer] S. S. Stroganov. There is no repair base in the gas northern region. It is being set up in Tyumen' extremely slowly. At the same time, the degree of energy equipping of the builders is continually rising, and new equipment is appearing, pipe layers, excavators, swamp vehicles, etc. It is necessary to expand the change points for spare parts in the oblast, increase their number and nomenclature, and the repair workshops should be advanced to the north, to Urengoy, Nadym, and Belyy Yar. The equipment itself should be different, suitable for operating under extreme conditions.

The system of electric contact welding developed by the Ye. O. Paton Institute has recommended itself well. It increases 4-5-fold labor productivity. But in order to repair this system it is necessary to fly to Kiev.

New technology and apparatus of ultrasonic defectoscopy of welded seams has been developed (by the scientists of the Moscow Higher Technical School imeni N. E. Bauman) and is being successfully introduced into construction of the northern main gas pipelines in the Tyumenskaya Oblast. Further, the increase in volumes of electric contact welding and methods of ultrasonic control will increase the rates and efficiency of construction of main pipelines, and will improve the quality of welding-installation operations and reliability of the systems of pipeline transport.

[Answer] G. K. Alpatov. For the construction of the extremely necessary repair base in the oblast, we need resources and capital investments. There are not enough of them, and they are scattered over different ministries. The commission believes that one should involve the manufacturing ministries in the repair of transportation and equipment. Its organization must occur in two directions. The first, main direction, is to build plants of each manufacturing ministry for centralized repair of assemblies and units and restoration of parts for enterprises of the oil and gas complex of West Siberia; the second is to organize unitized repair in regional centers of technical servicing of the manufacturing ministry and centralized supply of spare parts through the USSR Gossnab. The enterprises of a number of ministries operating equipment have agreed to transfer the production areas necessary for beginning of operations proportional to the available fleet of machines and mechanisms.

[Answer] N. I. Kurbatov. If one speaks about the work of the central board, then there is a movement towards the better. In the system of the Ministry of Construction of Oil and Gas Industry Enterprises in Moscow the plant "Remmekhgazprom" has been set up. We are counting on this base. We have an exchange fund for assemblies and units. By-assembly repair is becoming primary in our work. Repair sections are operating in Nadym, Igrim and Urengoy, but the north needs a good repair base the same as in Tyumen'.

I will note the extremely unsatisfactory supply of spare parts for single-bucket excavators EO-4121, rotary ETR-253, and ETR-254. There is a shortage of parts of the connecting rod-piston group of automobile engines KrAZ-255, Ural-375, ZIL-130, GAZ-53, as well as the leaf springs for all of their models. Spare parts are needed for the all-terrain truck tractors.

[Question] The previous questions regarding the use of the expedition-watch method and repair service are associated with the construction regime. Another is added to them: can one speak today of year-round construction under conditions of West Siberia?

[Answer] B. S. Trofimov. The potentialities for this construction are reduced because of the lack of good roads, and not only along the route. They are needed in regions of extraction of oil and gas and in building up the fields. The contribution of the Ministry of Transportation Construction and the involved road building organizations from other republics in this matter is great, but it does not correspond to the development rate of oil and gas extraction.

[Answer] G. K. Alpatov. Year-round construction is possible with buildup of the central Ob' region fields. In many cases this is a problem whose solution depends on the appropriate technical supply (hydraulic banking up of roads, construction platforms). The linear part of the pipeline is laid in winter, for example. In winter work is only feasible on individual "dry" sections of the route and on platforms of compressor stations, pumping stations and others. It is impossible to lay pipelines over the entire route. Hydraulic-banked up roads are needed where pipelines could be laid in their slopes as is done at the Samotlor field.

[Answer] A. K. Bondarenko. Main operations in summer during the construction of main large-diameter pipelines is impossible for the following reasons. The complex which is doing the construction is an entire mobile enterprise which has 80-100 units of construction equipment, with power of 16,000-18,000 h.p. When it is used, specific pressure on the ground is 60-450 KPa, while the bearing capacity of swamps in Central Ob' region in the warm season is 10-30 KPa. The length of the swampy sections of the route generally is 40-60 percent of the total length of the pipelines to be built. Analysis of work of the central board in 9 years has indicated that the volume of construction of pipelines in summer is in limits of 3-5 percent of the total volume. It includes rebasing of the equipment, and material resources. It should be said that outlays for summer construction are 3-4-fold greater than for the winter construction season. The maximum use of the summer period is reached in building up settlements and bases, welding pipes into links, preparing shipments, repair and restoration of equipment. The rates in the winter season depend on how all of this is done in summer.

[Question] The 26th CPSU Congress provided an all-encompassing evaluation of the role of the oil and gas complex of West Siberia in intensifying the economy of the country. Accelerated growth of the gas industry and construction of the main pipelines are tasks of enormous economic and political importance. There are many difficulties on the path to solving them. They should be overcome by the efforts of all sectors participating in the development program of the West Siberian complex.

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PIPELINES

PIPELINE SHIPMENT BY WATER PROVES EFFECTIVE

Moscow RECHNOY TRANSPORT in Russian No 3, 1982 pp 7-8

[Article by G. Shanev, deputy head of the Irtysh River Steamship Company: "Technology of Transshipment of Gas Pipes"]

[Excerpts] In 1979 transshipment of large-diameter metal pipes began for builders of gas pipelines of Nadym and new Urengoy on the northern sea route. As an experiment two diesel boats "Petrovskiy" and "Zolotitsa" with tonnage of 5,040 T each arrived at the roadstead of the Novyy Port of the Ob' Bay from Hamburg with pipes. As compared to the duration of shipments through the Straits of Gibraltar through the Mediterranean, Marble seas, through the Straits of the Bosporus , Black Sea and further along a railroad to the river ports of the Irtysh Steamship Company, now the time for delivery of pipes and the transportation costs have been reduced 5.5 and 3.8-fold.

These transshipments made it possible to exclude ballast runs of the sea-going ships, and to free up a considerable number of railroad cars.

A plan was set for 1980 for delivering these pipes to Nadym with transshipment on the external roadstead of Novyy Port from sea-going ships in a volume of 80,000 T, and 150,000 T for 1981.

In 1980, 8 barges and 3 tugs were assigned for the line Novyy Port-Nadym, and for 1981 navigation, 12 barges and 4 tugs.

Organization of work of the sea-going ships was determined by a contract between the Ministry of the Navy and "Glavsibtruboprovodstroy" according to which pipes on the outer roadstead are transshipped by forces and resources of the Nadym trust "Severtruboprovodstroy." For this purpose two floating cranes with tonnage of 16 T each were allocated in 1981. The crane crews implemented the slinging and unslinging operations.

For 1981 navigation on the Novyy Port roadstead, 42 sea-going vessels were developed and the volume of transshipments was 152,600 T.

Analysis of the results of this work indicated a number of shortcomings in the organization of transshipments and processing of ships on the outer roadstead. The sea-going ships did not arrive rhythmically at the roadstead, as a result, their standing waiting to be processed was 475 h. Considerable idling of the transportation resources was permitted because of unsatisfactory meteorological conditions, untimely arrival at the roadstead of transshipment of the floating cranes and their technical malfunctioning.

The above-water side of the sea-going ships is somewhat higher than the level of arrangement of the cabin of the crane operator on the floating cranes. Therefore transshipment of pipes is only possible with the help of signallers. The plan for arrangement of pipes in the bilges excluded the use of automatic grasping devices. Transshipment of the pipes was done according to the following technology: the freight-grasping device used was a four-end eight-meter sling. The pipes were slung into the bilge of the sea-going ship by two people, they were unloaded onto the barge by one. A signaller was constantly on the main deck of the transportation vessel in the region of the bilge from which the unloading was being done.

The crane and the barge were set on the leeward side of the transportation vessel. This measure made it possible to reduce rocking of the crane and the barge. The crane was moored to the side of the transportation vessel by propylene cables using an elastic spring.

The propylene cables are lighter by specific weight than water, but they are not inferior in strength to steel and capron. This significantly simplifies the process of mooring and guarantees reliable mooring. Unfortunately, cables of this type have not yet been supplied to the Irtysh Steamship Company.

The experiment of working in 1981 navigation indicated that with the active technological plan and technical supply of the roadstead, the main volume of transshipments (152,600 T) can be slightly increased. Further increase can be obtained only by increasing the number of floating cranes, roadstead-maneuverable and transport vessels.

Increase in the duration of the operational period of this line is practically excluded since the steamship company for operation under ice conditions does not have shallow ice breakers and special towed ships which correspond to the operating characteristics of the existing overall dimensions of the route.

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SPECIFICATIONS GIVEN FOR POLYMER COATING SPRAYER

Moscow NEFTYANOYE KHOZYAYSTVO in Russian No 4, Apr 82 inset between pp 40-41

[Article: "Device for Applying Polymer Coatings"]

[Text] Authors: K. M. Gil'man, M. A. Poluyanov, V. V., Kirpa, S. S., Manedov, L. F. Zabiyaka.

The device for applying the polymer coatings is designed for applying protective corrosion-resistant polymer coatings on steel structures, parts of equipment and surface of pipelines used in aggressive media. It is a gas-flame pistol with eddy mixer. The device can be used both under stationary and under field conditions.

Powder thermosoftening plastics are used as the polymer materials: polyethylene, pentaplast, etc.

Because of the new design of the eddy mixture, the quality of the gas-powder mixture was improved and the reliable operation of the device was increased.

Industrial tests of the device have been conducted at the oil extracting enterprises of the Ukraine and Belorussia. It has been introduced into the oil and gas extracting administration Chernigovneftegaz. The use of the device considerably improves durability of assemblies and parts of equipment. This guarantees considerable conservation of materials.

Specifications

Output (for quantity of applied polymer), kg/h	3-4
Pressure of gas-powder mixture, MPa	0.1-0.2
Pressure of combustion agent at inlet to device, MPa	0.3-0.5
Overall dimensions of gas-flame pistol, mm	67 x 190 x 380
Weight of pistol, kg	1.1

The developer is the State Scientific Research and Planning Institute of the Oil Industry, Ukrgipronііneft'.

For information please apply at the following address: 252068, Kiev-68, Pr. Palladina, 44, Ukrgipronііneft'.

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PIPELINES

OIL, GAS PIPELINE CONSTRUCTION PROGRESSING ON SEVERAL FRONTS

Moscow IZVESTIYA in Russian 3 Apr 82 p 2

[Article by V. Vukovich, T. Vinogradova, V. Ivanov, E. Mal'bakhov, G. Panushkin, A. Chemonin, and the last section by V. Leykin: "The March of a Great Construction Project of the Five-Year Plan"]

> [Text] The second of 6 transcontinental trunk gas pipelines, the Urengoy-Petrovsk, is operating throughout its entire 2,731-kilometer length.
>
> Erection of the largest West Siberia-Central Economic Region trunk gas pipelines and the Urengoy-Uzhgorod gas-export pipeline is going on full blast. By way of responding with deeds to decisions of the November 1981 CPSU Central Committee Plenum, gas pipeline builders have achieved a remarkable labor victory--the second of six Urengoy-Petrovsk trunk gas pipelines, 2,731 kilometers long, is ready for turnover for permanent operation. It is being put into use after the Urengoy-Ukhta-Gryazovets trunk line, which was completed during the first year of the 11th Five-Year Plan.
>
> Since the start of the year, customers have already received more than a billion cubic meters of "blue fuel" over the new Urengoy-Petrovsk gas-transport arterial. One more specially-built river of gas is operating and working up to the designed capacity!
>
> Today IZVESTIYA publishes information about the heroic laborious workdays of the gas pipeline builders, who are waging a lively struggle for successful implementation of 26th CPSU Congress decisions and for further strengthening our motherland's economic might.

Ahead and Across the Carpathians!

The Carpathian's summits are still covered with snowy caps, but spring has already broken out here in its own right. Its signs are in the crystalline chiming of the rivers and brooks that run from the slopes along the valley's stony channel. And the roads have their own transformations. One encounters increasingly a diversity of truck-tractors on them. But all of them have a plate with the word

"Soyuzintergazstroy." On one of them is a tall unit painted yellow. We give the signal to stop with a wave of the hand. The driver, of middle age, in a quilted jacket, descended from the cab.

"What is your name, please," I asked.

"Apostolyuk is my family name. I'm Ivan."

"Where are you headed?"

"To the base of the Urengoy-Uzhgorod gas pipeline builders. I am bringing an excavator there."

A brief conversation directly on the road forced me to change my original plan of getting to the pipeline route at once. We followed the Tatra and soon came to an area alongside the Bogorodchany Compressor Station, which serves the previously built Soyuz surface line. A large accumulation of earthmoving machinery with the brands of domestic and foreign plants were visible.

"Now see for yourself," as Ivan Apostolyuk summed it up, "that our Transcaucasus Administration pipeline builders is the one that 'is waging the war' during the crossing of the Carpathian range!"

Our collocutor, in naming the contractor, had not made a slip. The Transcaucasus Administration, which is assigned to the Armenian capital--Yerevan--is charged with laying steel pipe for the Urengoy-Uzhgorod gas-export pipeline. The subunit of this construction organization, with adequate work experience in mountain localities, had distinguished itself in laying the Soyuz gas pipeline.

In order to see from what, precisely, the laying process itself starts with, we went to the village with the nice name of Yasen' [Clear]. Spread out on its outskirts were racks for welding pipe into sections, which then are carried out onto the route.

"We have been erecting it earlier than planned," said Fariz Sadriyev, chief of the section that was called upon to storm the heights. "V. Avanesyan's brigade distinguished itself in creating the racks. Namely, in the shortest time possible. There is still another peculiarity. Previously the welders had welded two-pipe lengths, and they were insulated alongside the ditch. Now we are receiving pipe with a reliable protective 'jacket' from the Mannesmann (FRG) enterprises and, partially, from Japan. This will help to speed up the work."

While we were talking with Fariz Sadriyev, barrel-like mobile housing for the housing settlement approached. It was planned to have all the conveniences. The nearest kolkhozes--Kolkhoz imeni Shevchenko and Kolkhoz Bol'shevik--agreed on their own initiative to participate in its erection.

...On the road to Yasen' village we dropped in at Ivano-Frankovsk. The Soyuzintergazstroy construction administration should not be forgotten. After unfolding a map of the gas pipeline section from Vinnitskaya Oblast to the state border, administration chief V. Pushkarev said:

"First of all, it should be noted that, in addition to Soviet builders, we also have a foreign contractor. Representatives from the German Democratic Republic are about to arrive to coordinate the work charged to it. And the amount of it is substantial."

According to the design, the so-called "Kilometer 0" of the section is begun not far from the town of Bogorodchany. On a sunny day, as if at a launch, a detachment of equipment operators arrived at this kilometer, and along with them came Yuriy Timofeychok's overhead-welders' brigade. The builders undertook their usual work, which they were engaging in, not for their first year. And the route itself is a narrow strip of land. But first, prior to laying the ditch along it, a bulldozer sets to work. It begins to remove the fertile soil to one side, in order to return it to its place later for recultivation. It is prohibited to bypass this measure. The kolkhozes in the Carpathians are not rich in plowland. For their major animal-husbandry business, each hectare is precious. Then the booms of the powerful excavators began to make their earthly bows. Among them was Leontiy Bolyukh's machine. Scoop after scoop, he removes the ochre-colored clayey soil.

When the string of two-pipe sections had been stretched out along the freshly-dug ditch, Yu. Timofeychuk said to his overhead welders:

"Well, friends, go to it!..."

And the joining of the separate sections into a single strand was started. Accepting our congratulations on this, the now-familiar Fariz Sadriyev noted with worry:

"Somewhere a few kilometers from 'Kilometer 0,' the swamps begin. They stretch out to the foot of the first grades. Some difficult work awaits us, but we have become accustomed to doing it at a good pace."

And so the assault for which they had been prepared, which all the builders had been waiting for with impatience, was started. Its motto became: "Forward, to the assault on the Carpathian Mountain Range!"

Today on the Route

Total length of the five West Siberia-Central Economic Region trunk gas pipelines and the Urengoy-Uzhgorod gas-export pipeline will be 20,000 kilometers.

On 2 April the builders of the gas-transporting arterials had welded into pipeline strand 7,068 kilometers of pipe.

On the route, in the area of Sukhodol village, Kuybyshevskaya Oblast, representatives of all 36 linear flow-line groups of the Urengoy-Novopskov trunk line summed up on 2 April the results of the first stage of socialist competition in honor of the 60th anniversary of the forming of the USSR, and they adopted new and increased commitments.

The collectives of Severtruboprovodstroy [Trust for Pipeline Construction in the Northern Economic Region], Kuybyshevtruboprovodstroy [Kuybyshev Pipeline Construction Trust] and the Transcaucasus Administration for Pipeline Construction of Soyuzintergazstroy are ahead of the competitors.

The Omsk Scale

Omsknefteprovodstroy [Omsk Oil Pipeline Construction Trust] was organized during the 1950's. At that time they were still only "getting ready to discover" Tyumen' oil. It was necessary then to stretch oil pipeline not from Siberia, but to Siberia: further development of Siberia would be extremely problematical without a sharp increase in the power-worker ratio at the industrial complexes. And so the first oil came from the west, from Bashkiria. From Omsk, which had become an "oil" gate, the black gold began to go farther, to the east....

The trust headquarters was content:

"Our section of the Urengoy-Petrovsk gas pipeline was 184 kilometers long," says Deputy Manager V. Tret'yakov. "We should have finished building it in the second quarter of this year, but we finished laying it at the end of last year. We tested it in January and turned it over to the acceptance commission in February. This section was located in the north of Sverdlovskaya Oblast. The distance? Well, it's still not so long. On our Omsk scale, a fair distance is considered to be the north of the Komi ASSR or the region of the Komsomol'sk-na-Amur-Okha pipeline route, which we built. From there to Sakhalin is much farther than to the western borders."

The Omsk pipeline-route workers' expedition that had been sent to Sverdlovskaya Oblast consists of 1,200 people. They live in 10 field settlements, in mobile housing. They will have to work there for a long time: several strands of the gas pipeline stretch out simultaneously in one "corridor." They finished work on the Urengoy-Petrovsk route and began to lay sections of the Urengoy-Novopskov arterial, and in the autumn they will undertake the Urengoy-Uzhgorod route to their cutoff point.

I was able to "catch" a rare visitor in Omsk--senior superintendent Petr Starushenkov. The superintendent is 30 years old, 9 years of which he has spent roaming from pipeline route to pipeline route. Right now he and his wife and 5-year daughter are living not far from the settlement with the "wild" name of Lesnaya Volchanka [Timber Wolf].

"Take our section, for one thing," says Staruchenkov. "There are 61 of us. Many are family men. And all of us, taken together, are like one family. The relationship that connects us is not the fact that we are amiable, and even less so that we are related: most of the comrades have been working together now for 7-8 years. And the age of the main 'nucleus' is about the same--about 28-30 years. We do not simply work on the route but we create our own living conditions, everyday existence, and we try, as they say, to combine the pleasant with the useful. Of course, we have both our own electricity and heating, a bath, and a good dining room, which is supplied somewhat better than a city dining room. There is a field club, television sets and tape recordings.

"On days off we can board our bus and set out for the nearest town and spend time there," Starushenkov continues his account. "But the backwoods also have their own fascinations--an expanse for hunters, fishermen and lovers of mushrooms and berries. The work is not easy, but we have become accustomed to its complexities and its strenuousness. Sometimes we have to spurt, to lay pipe in such a short time that you do not notice whether it is day or night. Once in the spring we were going

through a swamp that was thawing out before our very eyes. Heavy equipment could have sunk in a quagmire, which a few hours ago had been frozen solid. How we worked! Everyone had to expend so much effort to succeed, to be not even half an hour late! But we got out of it and we came out onto a solid spot. We did not get stuck. For indeed we would have lost not a week because of this swamp but even months."

On the trust's map black lines for oil pipelines and blue lines for the gas trunk lines stretch out from Omsk. Expeditions have been sent to the Punga-Ukhta-Gryazovets line and to the blue routes of Bukhara-Ural and Nizhnyy Tagil-Gazli, and they did their business there. Pipeline has been laid from the Tyumen' fields to the Kuzbass [Kuznetsk Coal Basin] and from Surgut to Polotsk.

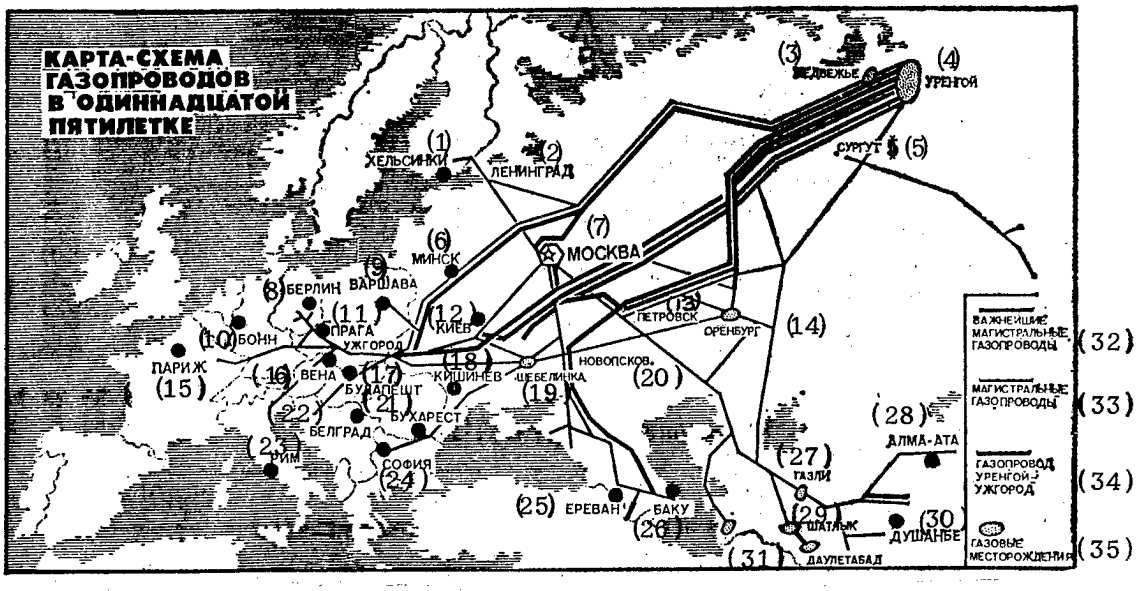
No two kilometers are alike. Ordinary linear measurements do not apply here. Moreover, the kilometers are "seasonal"--winter, which is somewhat easier, although at times the cold breaks the metal, and summer, which is the most difficult. So it is that measurements here are distinctive. SU-8 [Construction Administration No 8] chief Vasiliy Sorokin says:

"Worthless land is assigned to the pipelines--rocky sections, swampy soil, forested thickets. Unfavorable surprises also are encountered. Once we went through old gold excavations. Decades ago dredges had pumped it to a pulp, and a silty massif 210 meters wide and 9 meters deep had been formed. Soupier than any swamp! How to get by such an obstacle? We tried to freeze an ice bridge--the ice sank and drowned. We had to take the silt out with an excavator and then, again and again, throw in soil until a firm dike had been established--only that way was it possible to lower the pipe.

"An overflowing stream named the Kavka--480 meters wide and 5½ meters deep--will be long remembered. We lowered such a long inverted siphon, welded from pipe 1,420 millimeters in diameter, for the first time in the country. It is better to deal with rocks. On the section where our administration is working, it is necessary to surmount eight water crossings--the bottom of each stream has to be prepared as a bed for the pipe--and railroads are "undermined" in three places, highways in two places. Before the swamp thaws out, we will hurry to lay the pipe in precisely the most good-for-nothing places, since in the summer they will be converted into quagmires.

"That is why time does not matter to us. Often we work throughout the daylight hours. We have people who are jacks-of-all-trades. They master complicated equipment excellently. Both domestic and foreign. In our business it is impossible to overestimate the value of even one good professional. The more so if he knows all the pipeline specialties. These include mechanized column brigade leader Hero of Socialist Labor Anatoliy Zvonarev, leader of the repair-workers brigade Grigoriy Deynek, and heavy-bulldozer operators Aleksey Kalugin and Anatoliy Ivanov. By spring we shall transfer to the Urengoy-Uzhgorod export pipeline. We should prepare a backlog of accomplished work for the coming year."

The Omsk trust, which is located at the busy crossroads of the "gate to Siberia," is to lay each year almost 200 kilometers of trunk gas arterial and to do almost 100 million rubles' worth of work. The matter has been set into motion. There is good experience. The large-diameter pipe will arrive without interruption.



Schematic Map of Gas Pipelines During the 11th Five-Year Plan

1. Helsinki.
2. Leningrad.
3. Medvezh'ye.
4. Urengoy.
5. Surgut.
6. Minsk.
7. Moscow.
8. Berlin.
9. Warsaw.
10. Bonn.
11. Prague.
12. Kiev.
13. Petrovsk.
14. Orenburg.
15. Paris.
16. Vienna.
17. Budapest.
18. Kishinev.
19. Shebelinka.
20. Novopskov.
21. Budapest.
22. Belgrade.
23. Rome.
24. Sofia.
25. Yerevan.
26. Baku.
27. Gazli.
28. Alma-Ata.
29. Shatlyk.
30. Dushanbe.
31. Dauletabad.
32. The most important trunk gas pipelines.
33. Trunk gas pipelines.
34. Urengoy-Uzhgorod gas pipeline.
35. Gas fields.

A New Plant

A new enterprise has been built in Kamyshin. It is a large modern plant. It is the only one of its kind. Its official name is lengthy and awkward--the Experimental Kamyshin Plant for the Repair and Fabrication of Spare Parts for Gas-Pumping Equipment of Soyuzgazenergoremont Production Association of USSR Mingazprom [Ministry of Gas Industry]. The plant, which was created by forces of CEMA member countries, should return to operation any equipment that gas-pumping stations are equipped with.

"Every schoolboy now knows what natural gas is, what new gas arterials have been laid, and in what enormous amounts we are already sending gas from one end of the country to the other," says plant director V. Yan'shin. "But not by far does everyone know what electric-power and pumping capacity are needed. Therefore, our plant can be considered a firstling of domestic gas-pumping machinebuilding, although it is also related to repair enterprises. We have for 2 months been combining the setting-up of equipment with the fulfilling of orders, and we have overhauled three rotors and repaired three others to a lesser degree. Plus we have produced many other spare parts for everything."

G. Charonov, an advanced worker, a native Kamyshinian and supervisor of an integrated brigade for rotor repair, continues this thought:

"Everything here is in embryo, because the plant has just been born. But to work trickily is interesting!"

"This point cannot be bypassed in silence," added party bureau secretary V. Lobachev, who is also chief of the Economic Planning Section, "about the quality of the construction work. Czech builders erected the plant. Take a look, everything has been done with such thoroughness. Our collectives are very much friends, and we understand each other with half a word. We are very grateful to our Czech comrades."

"However, there are also some important problems, which must be solved now," said V. Marchenko, chief engineer of the new enterprise, continuing to acquaint me with it. "A completely new branch of industry, which has a great future, is being born!"

He walks over to a rotor that is lying on a rack and points to the bright silvery section of the shaft:

"This part was eaten away, it was worn, but it is a part that is most important--the shaft. The question arose: . . either throw away the whole rotor because of this defect, or find a way to repair it. We found one. We used gas-flame spray coating and then polishing. But in order to do this we have to have at hand everything that is required for repairing our superprecision and superstrength machines. And we must have at our disposal the appropriate stock of special metals, including nickel-containing and molybdenum-containing steels. Otherwise losses of gas caused by seal wear will increase in the pipelines. It's as easy as spit, as they say, for us to manufacture the seals, but...there is no aluminum of the required grade. The output of air filters, an unimportant fabric, was arranged. The suppliers' help is needed."

The plant's collective has started a labor drive in honor of the 60th anniversary of the USSR. It is clear that things are going well for all indicators. The collective is also coping successfully with new tasks that are unfamiliar to it. They themselves have, without the aid of manufacturers or setting-up specialists, started up complicated machines, started up and checked out the air-filters assembly line, and readied the flue-pipe line and the flow line for reducer pipes for startup. And, most importantly, they have started up the conveyors of the lines of the sections that will overhaul gas-pipe rotors and the rotors of the centrifugal gas injectors without any assistance, although the equipment suppliers should have done this. And the plant will carry out many other operations in a short time, without relying upon anyone. The collective is permeated with this necessity.

The Powerful Shoulders of the Machines [this section by V. Leykin, Director of the Moscow Experimental Machinery Plant of Minneftegazstroy [Ministry of Construction of Oil and Gas Industry Enterprises]

We are standing at the birthplace of specially produced equipment, which, in the skillful hands of a man, will be called upon to achieve an unprecedented pace in pipeline construction. All-terrain swamp-traveling Tyumen' vehicles were

manufactured for the first time at our plant. This is an astonishing machine! Imagine--36 tons on the flatbed, but the unit-area pressure of the crawlers is less than that of a skier. We simply were gripped by the work, and in 2 months we transformed our designers' notion into reality, and after making two vehicles, we were charged with making another. In 1979 we made the first series--10 swamp-travelers. Right now the Kropotkin plant is sending 100 machines to the pipeline routes annually. And now the Tyumen' has been returned to our department for modernization. And here is a machine--the ETR-254 rotary excavator. Four years ago it received the Emblem of Quality. The powerful earthmoving mechanism is capable of extracting 1,200 cubic meters of frozen soil per hour while readying a ditch 2.5 meters deep for the pipe. This year 20 ETR-254 excavators are to be sent to the route, and during the five-year plan we shall produce more than 400 such machines.

All the basic models of our output have been exhibited at the Stroydormash-81 [Construction and Road Machinery--1981] international exposition. Here was the GT-531 pipe-bending machine, intended for cold bending steel pipe under field conditions. Right now we are mastering the series output of new GT-1422 machines for bending pipe 1,4200 millimeters in diameter. The plant will produce winches for the TZR-251 ditching dredge. They will develop a tractive effort in the tens of tons!

Right away our trench-filling TR-351's, which are intended for round-the-year backfilling of pipelines 1,420 millimeters in diameter, have won recognition among pipeline-route workers. Such a machine can also serve for removing and replacing fertile layers of soil, for dusting the stone bottoms of ditches, and for leveling work in the winter. Its productivity is 1,200 cubic meters per hour, and the width of its bite is 3.5 meters.

Cable always goes along with the pipeline. The rototilling EF-131 excavator digs the ditch for it. This is a highly productive machine, which advances ahead of the ditch at a speed of 1 kilometer per hour. A new EF-251 rototilling excavator, assembled on the base of the K-701 tractor, is undergoing test right now at our proving ground.

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PIPELINES

BRIEFS

OKHANSK-KIROV GAS PIPELINE--Kirov--The Tatnefteprovodstroy [Tatarskaya ASSR Pipeline Construction Trust] collective has completed erection of the Okhansk-Kirov gas pipeline. Connecting industrial enterprises and housing tracts of Kirov city up to the gas arterial is now going on full blast. [By I. Smertin] [Text] [Moscow STROITEL'NAYA GAZETA in Russian 26 Feb 82 p 2] 11409

VYSK PRODUCES CLAD PIPE--The first series output has been obtained from the large-diameter clad-pipe department that has been established at a metallurgical plant in Vysk (Gor'kovskaya Oblast). The operating pressure in gas pipelines made of clad pipe can be increased to 100-120 atmospheres and, consequently, the productivity of the fuel arterial doubled. [Text] [Moscow KRASNAYA ZVEZDA in Russian 14 Mar 82 p 1] 11409

PIPELINE BUILDING NEAR CARPATHIANS--Bogorodchany, Ivano-Frankovskaya Oblast, 17 February--Today the first pipe on the western section of the Urengoy-Uzhgorod gas pipeline was laid by Soyuzintergazstroy Association construction workers. Within a short time, stands for joining were erected, where pipes are to be welded in 23-meter lengths and insulated. Ural-type motor vehicles, which are equipped for delivering two sections, instead of one, ready for laying, will take them out to the line. Builders who worked on the Soyuz trunk pipeline have become the nucleus of the collective. Having begun to lay the gas pipeline with a precise rhythm, they have committed themselves to completing construction and installing work on the 112-kilometer section between Bogorodchany to the Carpathian city of Volovets before the end of the year. This will be the collective's gift, for which envoys from eight republics are toiling, for the 60th anniversary of the forming of the USSR. (By RATAU [Radiotelegraph Agency of the Ukraine] correspondent B. Vivchar] [Text] [Kiev PRAVDA UKRAINY in Russian 18 Feb 82 p 1] 11409

STAVROPOL' BULK-PLANT PIPELINE--The underground method of delivering gasoline and diesel fuel by a pipeline, to which the builders connected the local bulk plant yesterday, will guarantee Kirovskaya Rayon of Stavropol' kolkhozes and sovkhozes uninterrupted refueling for tractors, combines and motor vehicles during the field-work campaign. Such transportation is economical: the workload on the railroad is reduced, the labor-intensive operations of filling and cleaning tank cars is dispensed with, and losses of fuel en route are completely precluded. [Text] [Moscow PRAVDA in Russian 9 Jan 82 p 2] 11409

CHUVASHIA PIPELINE COMPRESSOR STATION--Chuvashskaya ASSR--It is far from the Volga and from Chuvash territory to either the famous gas fields of Siberia or to the country's western borders. But the words "Urengoy" and "Uzhgorod" can be heard

frequently today in many of the autonomous republic's cities and villages. The new superlong Urengoy-Uzhgorod gas arterial crosses Chuvashia from east to west. And close to one of the autonomous republic's rayon centers--the village of Krasnoarmeyskoye--a high capacity compressor station is being set up. Erection of the gas compressor station and also of a housing settlement for its workers has been entrusted to the collective of the construction administration of the Cheboksary Hydroelectric Power Station. The path from the Volga hydroelectric complex to Krasnoarmeyskoye village is not short. And no small amount of work must be done. The hydroelectric-system builders must create within a short time a pioneering construction base and lay good-quality roads and utility and service lines. Right now a housing settlement for more than 3,000 people is being designed. It is proposed that urban conveniences will be combined here with the potential for the advantages that are favored by rural living and household affairs. Chuvashia's railroad yards have become more lively. Tens of cars with pipe 1,420 millimeters in diameter have been unloaded. A temporary settlement for gas pipeline builders has been located in the neighborhood of the Vurnary regional center. Welding units have started work. Already the first tens of multimeter welded metal lengths have been readied. Laying the arterial over Chuvashia's land has been charged to the Kuybyshevtruboprovodstroy [Kuybyshev Pipeline Construction Trust] collective. It includes many who are experienced masters of their business, who have completed their work at other large construction projects at various ends of the country. [By Yu. Knyazev, PRAVDA stringer] [Text] [Moscow PRAVDA in Russian 22 Mar 82 p 1] 11409

IRELYAKHSKOYE-MIRNYY GAS PIPELINE--Mirnyy--The first kilometers of pipeline that will join Mirnyy with the Irelyakhskoye gas field have been laid. Already this year it has arrived at the diamond district's capital. It will improve the city's energy balance and will enable boilerrooms and housing to convert completely to the "blue fuel." [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 7 Feb 82 p 1] 11409

LIPETSK COMPRESSOR STATION--Lipetsk--Energometallurgmontazh Trust installers have put in the last of six turbines involved in the construction of a high-capacity compressor station on the Urengoy-Uzhgorod gas pipeline route. Using widely the experience gained during erection of Lipetsk Magnitka, the builders have resolved to cut in half the time required for erecting the station and to put it into operation in June of this year. [TASS] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 7 Feb 82 p 1] 11409

COMPRESSOR STATION AUTOMATIC EQUIPMENT--L'vov--The production of automatic equipment for compressor stations on the Urengoy-Uzhgorod gas pipeline, the longest in the world, has begun at the L'vovpribor plant. Automated equipment will start the stations, put them onto the prescribed regime, and monitor the temperature, pressure and flow rate of the gas. According to preliminary computations, each of the modern sets of equipment will save up to 100,000 rubles annually. The innovation was developed by Leningrad Scientific and Production Association Burevestnik specialists in collaboration with their L'vov colleagues. By the end of this year the installers of the Urengoy-Uzhgorod line compressor stations will receive 155 sets of regulating apparatus of the very highest quality. [By L. Sotnik] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 2 Feb 82 p 2] 11409

TYUMENSKAYA OBLAST HOUSING--Leningradostroitel'stva [Leningrad Housing and Nonindustrial Construction Institute] has completed the development of master plans for two new Tyumenskaya Oblast cities. Tikhiy and Negan' are the names of these

communities. Much attention is being paid to the development of Tyumenskaya Oblast--a district that is rich in useful minerals. Oilfield and gas-field workers will live in the new cities. Housing designed for the region's severe climatic conditions are being designed. [Text] [Moscow ZHILISHCHNOYE I KOMMUNAL'NOYE KHOZ-YAYSTVO in Russian No 3, Mar 82 p 23] 11409

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GENERAL

CONSERVATION REQUIRED FOR FURTHER DEVELOPMENT OF IRKUTSKAYA OBLAST

Moscow PRAVDA in Russian 12 May 82 p 3

[Article by V. Malov, secretary of the Irkutsk CPSU obkom: "On the Program 'Energy'"]

[Text] Nature has been generous to the Irkutskaya Oblast. The balance reserves of coal here exceed 12 billion T. There are enormous hydroresources. A powerful fuel and energy complex has been created on this base. Its percentage in the gross product of industry in the oblast reaches 20 percent. In last year alone, about 26 million T of coal was extracted. Its net cost is 5-7 times lower than in the European regions of the country. At the Bartusk, Irkutsk, Ust'-Ilim and other power plants, 62 billion kW-h of electricity has been generated.

All of this made it possible to rapidly develop nonferrous metallurgy, chemical, petrochemical, paper and pulp, and other energy-intensive sectors of industry. But the energy outputs are already used with the maximum load. There is an acute problem of conservation of all energy resources, and their efficient use. Our scientists and specialists under the supervision of the Director of the Power Engineering Institute of the Siberian Department of the Academy of Sciences, corresponding member of the USSR Academy of Sciences Yu. Rudenko has made a detailed analysis of how the consumers use energy and heat. Based on this, a program "Energy" was developed whose realization will conserve 2.3 million T of fuel of standard calorific value during the five-year plan. In particular, by introducing new and improving the active technological processes, equipment, machines and mechanisms, it has been resolved to conserve about 1.5 million T of fuel. It is planned to improve the use of secondary resources, heat of ventilation emissions of industrial enterprises and public buildings.

The activity of the municipal and regional party committees, primary party organizations and people's controllers is subordinate to implementation of the "Energy" program. The first results of this work are already available. In Angarsk during the year, 32 million kW-h of electricity and 39,000 T of fuel were conserved. In the production association "Angarsknefteorgsintez" a specially created staff monitors conservation of energy. In 5 years, the chemists have decided to reduce its specific consumption by 10 percent.

A whole series of valuable innovations have been used by the collective of the Order of Lenin Bratsk GES. Thus, the winding of the machine stators has been replaced by more advanced, with thermoreactive insulation. All the units have been reconstructed, as a result the "power" of each of them rose from 225,000 to 250,000 kW. The power of the hydraulic power system was increased from 4.1 to 4.5 million kW. This is equivalent to an annual generation of another 2 billion kW. In order to obtain a similar addition without reconstruction, they would have had to install two additional units, spending four times more resources.

The Bratsk workers have fulfilled complicated measures in cooperation with the machine builders. The workers of the production association "Leningradskiy metallicheskiy Zavod" have made a mold for correcting the profile of working wheels of turbines. The blades were distorted by the destructive effect on the metal of cavitation. Many defects have been eliminated. The efficiency of the turbines has noticeably risen, as a result the collective has additionally obtained 208 million kW of electricity per year.

The metallurgists of the Bratsk aluminum plant, the flagship of the sector, last year conserved almost 49 million kW of electricity. They updated equipment, improved the quality of the anode mass, replaced the anode pins with more modern ones, and used high-temperature annealing of the furnace bottom in starting up the electrolyzers. In their future plans are introduction of a new method of annealing baths, recovery of heat of exhaust gases. During the five-year plan they have resolved to conserve 886 million kW of electricity. Hundreds of plant workers have proven to be models of zealous management and prudence. The brigades of electrolyzers headed by V. Dontsov, for example, have a lot of conserved resources on their account.

There are many other similar examples. Machine operator of the locomotive depot in the Irkutsk-Sortirovochnyy station, member of the office of the party obkom, A. Fedorov has today conserved about 15,000 kW of electricity. On the whole, the East Siberian railroad last year conserved over a 100 million kW.

For us the problem of conservation of electricity is especially acute. The fact is that in recent years the development of the fuel and energy sector of the oblast has slowed down, and the shortage of energy facilities has grown. But one does not go far only on enthusiasm. We have to expand the active thermal plants in the Irkutsk, Usol'ye-Sibirsk, Bratsk, Zima, Ust'-Ilimsk and introduce over 600 megawatts of new generating facilities. It is necessary to construct the required number of heat networks so that the boilers with total output over 500,000 kW are closed.

Two-three-fold fewer outlays are required than in the construction of new power plants. It is important that all the thermal plants can be provided with local fuel, and this will permit an annual freeing up of about 100,000 railroad cars.

Calculations show, however, that despite the reconstruction of the open pit "Azeyskiy", our active enterprises of the coal industry will not be able to provide for the increasing demand of plants for fuel. At the same time, the coal from the Angarsk region is brought into the Buryatskaya ASSR, Krasnoyarskiy

Kray, Chitinskaya and Kemerovskaya Oblasts, where, it is known they have their own open pits and mines. In 1995 there will be a shortage of over 10 million tons in the Irkutskaya Oblast. It is planned to cover this shortage by the Kanasko-Achinsk lignite. It is planned to expand the Ust'-Ilim, Novo-Ziminsk TETs and to reorient the Novo-Irkutsk TETs and others in calculation for this.

The importance of KATEK [Kuybyshev Plant of Automobile and Tractor Electrical Equipment and Carbueretors] is indisputable of course. But, as is known, the shipping long distances of the Kanasko-Achinsk coal is inexpedient. The calculations of the institute "Vostsibgiproshakht" indicate that their replacement by in-house Mugunskiy coal will annually conserve over R 5 million.

The switching of our plants to coal of KATEK is also associated with a number of technical difficulties. We would have to stop and reconstruct the boilers, decrease their steam output. Serious complications will develop with shipping the fuel. In order to ship it from the Krasnoyarskiy Kray we would have to increase the carrying capacity and throughput of the railroad on the section Zaozernaya-Cheremkhovo.

It appears that the USSR Gosplan and the USSR Ministry of the Coal Industry need to examine the question of increasing the output of the planned open pit "Mugunskiy" to 20 million T. In order to accelerate this, the "Bratskgesstroy" should be entrusted with constructing the open pit.

Life demands the rapid development of fields in the southern part of the Tungusskiy coal basin. Fuel could come from here to the thermal plant of the Bratsko-Ust'-Ilimsk territorial-production complex. This requires acceleration of exploration and confirmation in the current five-year plan of the reserves of the Zheronskiy field, and in the 12th Five-Year Plan construction of an open pit with output of 5 million T. It is only 25 km from here to Ust'-Ilimsk.

For continuous supply with technological raw material for the production association "Angarsknefteorgsintez," we consider it necessary to develop more rapidly the Voznesenskiy field in the Cheremkhovskiy and Ishideyskiy in the Tulenskiy regions. It is also necessary to erect a plant for repair of mining equipment at Tulun, where the main mining enterprises will be concentrated with time.

The time has now come to determine the more distant future for the development of a fuel and energy complex, having stipulated the development of the near-Angarsk oil and gas fields. Great hopes are placed on the region of the Nepskiy arch, which is in the northern part of the oblast. On its southern edge, the Markovskiy and Yaraktinskiy gas condensate fields have already been explored. The production geological associations "Vostsibneftegazgeologiya" and "Irkutskgeofizika" recently discovered the Danilovskiy and Verkhne-Chonskiy oil fields.

Unfortunately geological exploration in this region is developing extremely slowly. The plan for deep drilling is annually not fulfilled. Difficulties are caused a great deal by the lack of roads and short navigation on the

Nizhnaya Tunguska. Under similar conditions, it is understandable that it is not easy to conduct geological exploration and ship in drilling equipment and other freight. The situation is complicated by the fact that the geological exploration organizations do not have a sufficient quantity of heavy-freight and highly passable transportation for winter shipment of loads, and the Lensk River Steamship Company has interrupted the schedules for shipments on the Nizhnaya Tunguska. Drilling and casing pipes, drill bits, salt, cement and other materials and tools are not delivered in time.

According to the conclusion of the specialists, there are chances to discover industrial gas reserves in the southern part of the Irkutskaya Oblast, in direct proximity to the major industrial facilities located in Irkutsk, Angarsk, Usol'ye-Sibirskiy. Preliminary calculations convince that the use of natural gas in the association "Angarsknefteorgsintez" alone will provide R 60 million of annual conservation. In addition, the use of gas, say in Irkutsk will drastically reduce the pollution. But the schedules for evaluating the areas which are promising for gas in the southern near-Baykal region are dragging on. I would like to believe that the USSR Ministry of Geology in the near future will intensify this work.

The national economy of the near-Angarsk region has many potentialities for further accelerated growth. They should be used completely, and at the same time achieve accelerated development of our eastern region.

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GENERAL

BETTER EXPLOITATION, MARKETING, BUILDUP URGED FOR WEST SIBERIAN FUEL BASES

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 4, Apr 82 pp 61-67

[Article by Ya. Mazover, manager of the SOPS [Council on Study of Productive Forces] Department under USSR Gosplan, and T. Makarova, senior scientific worker: "The Effectiveness of Siberia's Fuel Bases"]

[Text] The significance of the fuel and power complex (TEK) in the USSR's economy is ever increasing because of the rise in the power-to-worker ratio in all branches of the national economy. Fossil fuel will retain its leading role until at least the end of the 20th Century, despite the accelerated development of nuclear power and other energy sources (its share even at the end of the century will be four-fifths of the output of energy resources in the USSR).

In the last 20 years of this century the fuel industry is entering a new stage of development which is marked, in particular, by an increase in capital investment for the recovery and transporting of fuel. This is explained by the fact that it will be necessary to conquer fields of fuel resources in new regions with substantially more complicated natural conditions, which are located 2,000-4,000 km from the consuming regions, and also by the fact that expenditures are rising sharply for the recovery of fuel in the "old" regions (as a result of depletion of the more economical reserves). Under these circumstances, an improvement in siting the fuel industry and rationalization of its structure should exert a considerable influence on the economics of the whole country.

Siberia's fuel resources occupy the leading spot in the country's TEK's. They include the main forecast reserves of the country's oil, gas and coking and steam coal.[1] Thanks to these reserves, the USSR's economy can, even in the remote long term, be based on its own highly effective resources of fuel and hydrocarbon raw materials, unlike other economically developed countries.

Siberia is the country's main oil, gas and coal base. In 1981-1985 Siberia will furnish 60 percent of the total nationwide recovery of oil and gas and all the growth thereof, and it will provide a fuel supply for the European zone (more than four-fifths of the enormous flow of fuel that goes from the east to the European part of the country will be Siberian fuel) and also for the shipment of fuel for export.

[1] See L. A. Melent'yev. "Systemnyye issledovaniya v energetike" [Systems Research in Power Engineering]. Moscow, Nauka, 1979, pp 319 and 334.

The development of Siberia's fuel bases, which started in the 1960's, has exerted a decisive influence on raising the effectiveness of the country's TEK's. Concentrating fuel recovery in Siberia at the largest fields with favorable extraction-geology conditions has enabled high-capacity enterprises with highly productive equipment to be erected, and this has occasioned fewer expenditures here for the recovery of gas and of coal than in other parts of the country (table 1).

Table 1

A Comparison of the Economic Indicators of Fuel Extraction by Main Base

(in percents)

Fuel base	Gas		Coal (estimated in standard fuel equivalents	
	Prime recovery costs	Yield on capital	Prime recovery costs	Yield on capital
West Siberian	100	100	-	-
Timan-Pechora	127	59	-	-
Ural-Volga	109	82	-	-
Ukrainian	102	85	-	-
North Kazakhstan	180	39	-	-
Central Asian	107	117	-	-
Kuznetsk	-	-	100	100
Donets	-	-	202	48
Pechora	-	-	155	60
Moscow	-	-	205	47
Karaganda	-	-	126	73
Kansk-Achinsk	-	-	19	393
Ekibastuz	-	-	19	274

For example, the development of oil recovery in West Siberia helped to raise labor productivity in this industry for the USSR (in comparison with 1976) by 25 percent, yield on capital by 27 percent.[2]

West Siberian gas and Kansk-Achinsk coal are one-fourth to one-fifth the cost of Donets and Pechora coal and one-sixth to one-seventh that of Moscow Basin coal; and Kuznetsk Basin coal (stripmined) costs one-third as much as Donets and Pechora coal and one-fourth to one-fifth as much as Moscow coal. Suffice it to say that an increase in coal mining in the Kansk-Achinsk Coal Basin by 100 million tons over the existing level would enable the prime cost of coal mining to be reduced by almost 20 percent and labor productivity in its mining to be raised by 25 percent.

West Siberian gas and Kuznetsk coal that is stripmined are 1.3-fold to 1.5-fold cheaper in adduced expenditures in areas of the Central Economic Region than Donets, Pechora and Moscow coal, and so on. All this testifies to the effectiveness of maximum involvement of Siberian coal in the national economic turnover.

Paths for the Effective Use of Fuel Resources.

L. I. Brezhnev pointed out in the Accountability Report of the Central Committee to the 26th CPSU Congress that "the successes of the whole national economy will

[2] "EKONOMIKA NEFTYANOY PROMYSHLENNOSTI" [Oil Industry Economics], 1978, No 3, page 9.

depend to a great extent upon a rise in the effectiveness of the extracting industry. The route to this is an acceleration of scientific and technical progress, the integrated and intensive processing of useful minerals and wider use of secondary resources.[3]

One of the basic routes to raising the effectiveness of the West Siberian oil and gas complex is more complete removal from the ground and more rational use of the valuable hydrocarbon resources. Substantial resources of gas condensate and of gas with a high content of ethane and of higher hydrocarbons are concentrated in West Siberia.

The explored reserves of gas that contain valuable hydrocarbons (ethane, propane, butanes, and so on) that are quality standardized for processing are appraised here at 5.2 trillion m^3. These reserves contain 336 million tons of ethane, 214 million tons of propane and 128 million tons of butane; in the prospective reserves, the valuable hydrocarbon content exceeds 500 million tons, the forecast reserves 2.85 billion tons.[4] A large part of West Siberia's gas of complex composition (55-60 percent ethane, propane and butane) is located in the Nadym-Pur oil and gas bearing district, where the main gas recovery will be concentrated in the long term. The region second in gas recovery and in concentration of heavy hydrocarbon reserves is the Yamal Peninsula. Consequently, a huge base for recovering valuable chemical raw materials and household fuel can be created, provided measures for the more complete extraction of valuable components of the gas resources are performed on time.

A high pace of development of the Urengoy field, which should provide the entire nationwide growth in and more than 40 percent of the gas recovery of the USSR in 1985, is planned for the 11th Five-Year Plan. During this period, aside from exploitation of reserves of the Cenomanian deposit, development of Lower Cretaceous gas-condensate deposits that have a fairly high condensate content--up to 290 grams/m^3--and up to 10 percent ethane, propane and butanes, will start at this field. The explored reserves of high-quality condensate is appraised at 137 million tons.[5]

The technology of development without maintenance of formation pressure and gas processing at the field (low-temperature separation down to -30 degrees C) that was adopted for the gas-condensate deposits of this field leads to a fall-out of more than 45 percent of the condensate and the collection of only 50-60 percent of the potential content of the valuable hydrocarbons from the gas being processed, that is, high-quality raw material will be lost or else burned as steam fuel. At the same time, the technological solutions for exploitation of the gas-condensate deposits with maintenance of formation pressure that has been developed by Moscow Institute of Petrochemical and Gas Industry imeni Gubkin specialists will enable the formation's condensate-withdrawal factor to be raised by 20 percent. A 1-2 percent increase in condensate recovery is equivalent to taking additional millions of tons of crude from the ground (since 1 ton of condensate can replace 1.5-2 tons of crude used as fuel, or up to 5 tons of it used as petrochemical raw material). The

[3]"Materialy XXVI s"yezda KPSS" [Papers of the 26th CPSU Congress], Moscow, Politizdat, 1981, page 41.

[4]S. A. Orudzhev, "Goluboye zoloto Zapadnoy Sibiri" [The Blue Gold of West Siberia]. Moscow, Nedra, 1981, page 20.

[5]S. A. Orudzhev, "Goluboye zoloto Zapadnoy Sibiri," Moscow, Nedra, 1981, page 26.

approval of these proposals for industrial-test operation of the deposits is required. Further, a reduction in the temperature of gas separation at field facilities down to -60 to -70 degrees C will enable about 50 percent of the ethane and more than 90 percent of the valuable hydrocarbons to be extracted from the gas being processed. The treatment of condensate-containing gas at the field, which is now aimed only at treating the gas for transport purposes, can be converted into a specific-purpose industrial process for obtaining valuable components of gas resources.

The Urengoy gas-recovery complex will become, during the 11th Five-Year Plan, the scientific and technical base for selecting optimal solutions for the conquest of North Tyumen' fields. This is especially important, because it is planned that gas-condensate deposits of the Yamburg, Zapolyarnyy and Yamal Peninsula fields, where the condensate content in gas-condensate deposits is high (up to 543 grams/m^3 in the Nadym-Pur and the Pur-Tazov oil and gas bearing regions and up to 190 grams/m^3 at Yamal), will be put into operation after Urengoy.

In resolving questions of the utilization of valuable hydrocarbons, a deep study of questions of using them rationally is necessary. The ethane and condensate of the West Siberian fields are now being viewed as a promising raw-materials base for the Tomsk and Tobol'sk petrochemical complexes, and also of the Tyumen' gas-chemicals complex. A part of the condensate will be refined at gas-field installations in order to meet the requirements of gas-recovery enterprises for light petroleum product. The question of building a condensate refinery is being solved. All these problems must be examined in integrated fashion, taking into account the hydrocarbons available and the enterprises' requirements for raw materials.

Because of the lag in building gas-processing plants in West Siberia and the low level of buildup of the field's facilities for gathering and transporting casing-head gas from oilfields, more than half of this valuable raw material has not been used. At the Samotlor field only 70 percent of the casing-head gas resources have been used. When the Middle Ob' gas-treatment plants (GPZ's) reach full capacity, the situation will be somewhat improved. However, as oil recovery advances to the north and other fields are brought into development, casing-head gas utilization becomes complicated. It is necessary to provide a sealed system for gathering and transporting the casing-head gas together with the crude and for stabilizing the crude at central treatment centers with later treatment of the gas at the GPZ.

A wide fraction of hydrocarbons is now being separated at Middle Ob' GPZ's during casing-head gas processing. However, in so doing, the dry gas that is earmarked for power-engineering needs also contains valuable fractions, such as ethane, propane and others. The extraction of just 70 percent of the ethane from the dry gas will enable about 1 million tons of valuable chemical raw material to be obtained and a saving on the order of about 2 million tons of gasoline--the basic raw material for producing ethylene.

A most important direction for rationalizing the use of Siberia's oil is that of intensifying its refining and raising the output of light petroleum product with a sharp reduction in the long term output of mazut. Intensification of refining will not only promote the rational use of petroleum resources, primarily for producing motor fuel and petrochemical raw materials, but it will also yield a considerable saving of national economic expenditures, since, with all its capital intensiveness, far fewer expenditures are required than for the production of prepared

liquid fuel. It should be noted that intensification of the processing of crude is a complicated problem that requires a number of measures for the replacement by gas of the mazut that is used.

The problem of obtaining liquid fuel from coal is becoming increasingly urgent in the world. One of the more promising types of raw material for this in our country is Kansk-Achinsk coal, by virtue of its low sulfur content and ash content, the inexpensiveness of recovery, and the potential for use on a large scale (bearing in mind that coal consumption reaches 5-6 tons per ton of liquid fuel). L. I. Brezhnev pointed out at the 26th CPSU Congress that, "Glancing at the long term, the question of producing synthetic liquid fuel based on Kansk-Achinsk Basin coal should also be studied thoroughly."[6] An integrated specific-purpose program on this problem, which has been approved by the USSR Academy of Sciences, USSR Gosplan and GKNT [State Committee for Science and Technology] contemplates research and the erection of large installations for a number of methods for obtaining liquid fuel: hydrogenation, gasification, energy-technology treatment of the coal, the synthesis of methanol and hydrocarbons from oxides of carbon and hydrogen, and other methods. A test installation for coal hydrogenation with a productivity of 7-10 tons per day is being built in Tul'skaya Oblast, and it is planned to create higher-capacity installations--75 tons per day or more. An industrial test facility for the high-speed pyrolysis of Kansk-Achinsk coal is being built, but the erection of departments for processing the resin into liquid fuel still has not been called for there, and not all the necessary decisions on a high-capacity facility for hydrogenating coal have been made yet (which makes the design work difficult). All this compels the question about speeding up erection of the facilities to be raised, since only industrial-test verification will enable trustworthy indicators to be obtained and choice of the best method for industrial production on a large scale to be made.

Improvement of the Regionalization of Fuel Consumption

Improvement of the regionalization of fuel consumption is one of the main areas for raising the utilization effectiveness of Siberian fuel in the country. Siberian fuel is effective in comparison with other types of fuel even when it is delivered to the European part of the country. However, with such a great distance of transporting, it becomes more expensive by far and loses its economic advantage to a great extent: West Siberian gas sent to the Central Economic Region becomes three times as expensive, stripmined Kuznetsk coal more than twice as expensive, and Kansk-Achinsk (run-of-mine) coal is almost twice as expensive when transported to the Urals, and so on.

Because of this it is desirable, based upon the cheap energy resources and mineral raw-material resources, primarily hydrocarbons, to create in Siberia high-capacity power-intensive production facilities and to restrict rigidly their development in the European zone. Production specialization of Siberia, based upon fuel-and-power engineering and energy-intensive industries, is a most important direction in raising the effectiveness of TEK's of Siberia and the USSR and in alleviating the tenseness of the fuel balance of the country's European portion. Thus, the consumption of each million tons of standard fuel equivalent of Kansk-Achinsk coal in Krasnoyarskiy Kray yields a saving of 70-100 million rubles of capital investment and 8-10 million rubles in operating expenditures in comparison, for example, with the consumption of Donets coal in the Ukraine.

[6] "Materialy XXVI s"yezda KPSS," page 39.

Inexpensive fuel, large hydrocarbon raw-material resources and the presence of water resources and of areas for industrial construction are conducive to the development of large gas-chemicals and chemical-production facilities, for which purpose the Tobol'sk and Tyumen' complexes were erected primarily. The development of petrochemical complexes in West Siberia promotes the more rational use of hydrocarbon resources and the solution of most important national-economic problems--the proximity of large fuel and energy consumers to their sources and improvement of the regional siting of energy-intensive chemical production facilities, which consume 2-4 tons of raw material and 2-12 tons of standard fuel equivalent per ton of product.

KATEK [the Kansk-Achinsk Fuel and Power Complex], which will be the basis for the Kansk-Achinsk TPK [regional production complex], will include energy-intensive facilities that will produce alumina and aluminum for the national economy; electrochemical production facilities based upon local table-salt resources; wood-processing, pulp-and-paper and electrometallurgical industries; and other facilities--is being established on the basis of Kansk-Achinsk coal.

With the siting of energy-intensive production facilities in Siberia, the saving of capital investment in the fuel base (in comparison with siting these production facilities in the European area) reaches 40-50 percent of the cost of construction of the enterprises.

In addition to consumption in Krasnoyarskiy Kray, it is desirable to send Kansk-Achinsk coal to Irkutskaya Oblast, the western BAM [Baykal-Amur Mainline] zone and the eastern portion of West Siberia (all the new thermal electric-power stations should be based on it). This will enable the more transportable Kuznetsk coal to be freed for supplying the European regions. The total saving per ton of standard fuel equivalent will be on the order of 15 rubles of adduced expenditures.

The sphere of effective use of inexpensive but poorly transportable Kansk-Achinsk coal will be expanded provided it is "upgraded" and processed into a transportable high-quality fuel. Calculations have indicated that if the adduced expenditures for "upgrading" (the heat value brought up to 5,200-6,500 kilocalories per kg) are less than 5 rubles per ton of standard fuel equivalent, then the coal will be competitive with Kuznetsk coal that is being sent to the European area. However, only the erection of large installations will enable the advantages of each method of processing and the optimal sphere of its use to be demonstrated. Meanwhile, even for the more highly developed energy-technology method, the construction in Krasnoyarsk of ETKh-175 installations with a productivity of 1.2 million tons of coal per year is being stretched out, and the erection of installations for obtaining thermal coal, for the autoclave method and so on, is being hampered. USSR Minenergo [Ministry of Power and Electrification] and USSR Minugleprom [Ministry of Coal Industry] must take steps to speed up the construction of these important facilities.

The role of the Kuzbass [Kuznetsk Coal Basin] (where the country's main reserves of coking coal are concentrated) as the leading All-Union base for coking coal, which will supply the metallurgists of Siberia and, partially, those of the Urals and the European part of the country, is rising greatly. At the same time, the Kuzbass should be developed in accelerated fashion as an All-Union base for coal for power engineering. High quality a diversity of coal grades (suitable for all groups of customers), and favorable economic indicators for mining make the consumption of

Kuzbass coal rational for a large area, including a number of regions of West Siberia, the European part of the country, the Urals, Kazakhstan and Central Asia. The potential is great in the Kuzbass for the development of economical methods--stripmining (more than 150 million tons), hydraulic mining (more than 100 million tons)--with high labor productivity, which is important in the conduct of a labor-saving policy. Suffice it to say that labor productivity per worker with stripmining is 4-fold greater, and with hydraulic mining it is 2-fold greater, than with underground mechanical mining, and the prime cost for recovery is 1.4-fold to 1.6-fold less. In order to develop the Kuzbass, it is necessary to expand exploratory operations, strengthen the construction base and transport lines, develop the Yerunakovskiy and Uropsko-Karakanskiy regions, and so on.

It is desirable to ship West Siberian oil and gas to all parts of the country for use mainly as raw material and industrial fuel, and also for municipal and household needs (meanwhile, about half of all gas is now consumed at power-engineering installations, including power stations equipped for burning coal). The use of liquid and gas fuel for power-engineering purposes is not desirable in the central and southern regions of Siberia, in view of the presence there of large resources of cheap, poorly transportable coal.

The Effectiveness of Establishing Fuel Bases

An important path for raising Siberia's fuel-base effectiveness is to overcome the lag in developing the production and social-domestic infrastructure,[7] which will enable billions of rubles to be saved annually as a result of reducing transport expenditures and losses during hauling and transshipment, reducing the cost of construction, eliminating excessive reserves, raising the reliability of regional supply, and so on. These questions are especially severe because of the accelerated development of gas-recovery centers to the north of Tyumen' and the partial redeployment there of oil recovery.

Expenditures for the infrastructure are extremely great: they increase the specific capital investment for mastering Tyumen' North gas fields 2.3-fold.[8] For the coal industry, whose enterprises are situated in the more settled regions of the south of Siberia, infrastructure expenditures also increase the specific capital investment for mining coal, as is evident from table 2 (specific capital investment directly for mining taken as 100 percent).

The share of expenditures for infrastructure at the first stage of establishment of the West Siberian TPK reached 40 percent, although in so doing development of the infrastructure lagged behind development of the branch of the complex's specialization. This has increased personnel turnover and made fuel recovery more

[7]A number of special works are dedicated to questions of using the achievements of science and technical progress, concentrating production, and so on in the extraction, transport and processing of Siberian fuel for purposes of raising its effectiveness, and so they are not reviewed in this article.

[8]I. D. Karyagin, V. S. Bulatov and V. V. Tandalov. "Razvitiye gazovoy promyshlennosti severa Tyumenskoy oblasti" [Development of the Gas Industry in the Tyumenskaya Oblast North]. Moscow, Nedra, 1979, page 33.

Table 2

(in percents)

Coal basin (or field)	Specific capital investment for mining, taking infrastructure into account	
	Production	Production and nonproduction
Kuznetsk (stripmining)	131	164
Kansk-Achinsk	114	140
Transbaykal	125	159

expensive. This concerns primarily the transport lines that service the enterprises and facilities of the social and domestic infrastructure. For example, at the Medvezh'ye field, even after 7 years of operation, only half of the capital investment in the social infrastructure was assimilated. Out of 110 km of hard-topped roads in the field (in accordance with the design), only 45 km had been put into operation. The buildup of facilities of the Urengoy field was hampered during the 10th Five-Year Plan by a lag in the construction of railroads and of vehicle roads within the fields. This made it necessary to make primary use of air transportation and a multiple-element system of transporting with multiple transshipments. During the 10th Five-Year Plan Nadymgazprom spent 74 million rubles on air transport, which would have covered the erection of highways from Nadym to the Medvezh'ye fields. Computations showed that the buildup of facilities of the northern gas fields, with the Surgut-Urengoy railroad at hand, would cost at least 30 percent less than the multiple-element system of transporting freight, which includes transportation on big-load river ships, reloading to seagoing ships for hauling through the Ob' Gulf, then from seagoing ships to ships of light load capacity, which proceed by the Pur, Taz and other rivers,and later by winter-type vehicle roads or by air transport.

Development of the gas and oil industry in the Tyumen' North during the 11th Five-Year Plan will bring an increase in the amount of drilling and of capital construction by 2-fold to 2.5-fold, which will still cause an increase in the flow of freight to the North. Realization of the policy contemplated by the 26th CPSU Congress for accelerating the development of West Siberia's oil and gas industry requires mutually coordinated functioning of river, rail, road and air transport. This will enable reliability to be raised, shipment time for freight to be reduced, conditions for rhythmic operation of enterprises to be created, and expenditures for freight shipment to be reduced. During the 11th Five-Year Plan it is planned to prepare the Yamburg field for development. This will require the construction of roads in this more northerly region and docks on the Ob' Gulf, to be built ahead of the facilities for the fields by at least 1 or 2 years.

An important direction for reducing capital and labor intensiveness of construction in the North is concentration and specialization in the creation of infrastructure facilities--the centralization of power supply, the creation of high-capacity specialized construction bases and of building-material and construction-industry enterprises, consolidated repair and maintenance bases for servicing oil and gas industry facilities, and interdependent production facilities. The benefit from creating such enterprises in regions of joint development of oil and gas industry resources is especially great. However, during the first stage of establishment of the West Siberian TPK, these questions were resolved on the self-help principle,

which led to the creation of small enterprises with high labor expenditures. At Glavtyumenneftegaz [Main Administration for the Oil and Gas Industry in Tyumenskaya Oblast] 69 percent of the worker manpower is engaged in the infrastructure sphere. This is explained by fractionation of the infrastructure facilities and by the low level of mechanization and automation of production operations.

Power for gas-industry facilities in the North of Tyumenskaya Oblast has been supplied by small gas-turbine power plants, at which the cost of electricity is higher by an order of magnitude than that of the large Surgutskaya GRES, and labor expenditures for the operation and maintenance of the equipment are high. The lag in construction of LEP's [power-transmission lines] has led to an expenditure of funds on power supply that are equal to the cost of the transmission itself.[9]

The erection of small subordinate construction enterprises increases labor expenditures appreciably. In Nadym alone there were about 80 enterprises of various agencies connected with construction (the requirement for building materials was met by 15-50 percent for various types of output). Under these circumstances, the organization of large construction industry bases will allow costs for producing constructional structure to be reduced 1.5-fold below those of small subordinate enterprises.

The use of the outfitted-module method of construction, combined with a more compact configuration of structures, will enable the level of industrialization of construction to be raised to 90 percent, the equipment's operating reliability to be increased, and construction time and expenditures for the erection of facilities to be reduced. However, the development of modular construction is still in the beginning stage: the share of modular-type installations for Glavtyumenneftegazstroy [Main Administration for the Construction of Oil and Gas Industry Enterprises in Tyumenskaya Oblast] does not exceed 10 percent of the total cost of the area's facilities. This does not enable the technological process to be improved for all elements of the production chain and, as a result, it does not provide the proper benefit. During the erection of modular equipment, the share of manual labor is still high, since plants are producing some facilities in modular versions with a readiness of less than 60 percent. Reserves for reducing material and labor expenditures during modular construction consist in increasing the degree of industrialization of the work by expanding the products mix for erection of both the basic equipment and the auxiliary equipment.

The provisioning of skilled labor resources for facilities in the Tyumenskaya Oblast North, especially during the first stage, is extremely complicated, to a great extent because of the lag in the program for housing and municipal facilities construction. A sociological survey showed that 48-58 percent of the workers leave the northern regions because of a lack of well-appointed housing. With the existing "beating out" of personnel, each ruble invested in the nonproductive sphere brings no less benefit than a ruble invested in production (the buildup of facilities per worker in the North costs on the order of 20,000 rubles). Realization in the West Siberian TPK of the social program that was planned for the current five-year plan will enable the situation in housing and municipal construction to be greatly improved.

[9]See V. Filanovskiy. "The West Siberian Oil and Gas Complex: Results and Prospects," PLANOVOYE KHOZYAYSTVO [The Planning Activity], 1980, No 3, page 22.

The complexity of creating a social and domestic-affairs infrastructure for oil and gas enterprises in West Siberia has been occasioned, aside from the restricted period of active development of the field (as a rule, less than 20 years), by the extreme living conditions for people in the North. Because of this, wide use of the rotating-personnel method, combined with the operation of rotating-personnel settlements at the operating sites and a base city that is 200-500 km from them, is desirable.

The new way of servicing enterprises in the north with a work force will sharply reduce the number of workers who reside under extreme conditions, and it will enable the main portion of them to be stationed in base cities where the creation of comfortable conditions for living by the populace involves less expense. Thus the cost per square meter of living space (taking expenditures for facilities for social services into account) in small settlements at oil and gas fields is twice as much as at base cities. Concentration of the population in base cities will promote creation of the appropriate spheres of servicing and cultural and education facilities and construction of the processing facilities. Novyy Urengoy, Nadym and Surgut will become such base cities for gas-field workers, oilfield workers and power engineers of the northern fields, Salekhard and Vorkuta for geologists and oil and gas field workers of the Yamal Peninsula and the shelf zone.

At the modern stage of conquest of fields in the Tyumen' North, both the rotating-personnel and the expeditionary rotating-personnel methods are being used. Under the expeditionary rotating-personnel method, worker brigades are sent to various regions from the European part of the country. This method is now effective (it pays for itself in 3-4 years), but in the long term its importance should be reduced. Siberia needs permanent personnel, since the physical and psychological restructuring of the rotating personnel is a lengthy process, which provokes a reduction in labor productivity.

11409
CSO: 1822/154

GENERAL

WORK IMPROVING ON GAS PIPELINE PROJECTS FROM TYUMEN'

Moscow PRAVDA in Russian 4 May 82 p 2

[Part one of article by V. Lisin and V. Parfenov: "The Energy of the Tyumen' North"]

[Exerpts] The Tyumen' North is a vast region. Our helicopter had been hopping over the blindingly white Yamal tundra for hours. What is striking is that people have found riches in this cold land. The discovered reserves of natural gas in our country today are 34 billion cubic meters, and more than 27 billion of them are found in Western Siberia.

Energy from the Tyumen' North has been pouring into the mighty engine of our economy for some years, giving it enormous power and force. This region sends about 200 billion cubic meters of gas, which is truly a golden fuel and raw material for chemistry, to the national economy each year. But that is not enough today. In the current five-year plan five major gas pipelines from Western Siberia to the Central Zone as well as the export pipeline from Urengoy to Uzhgorod must be launched in operation. In the coming years the country will receive 1 billion cubic meters of precious raw material a day from the Tyumen' fields. Comrade L. I. Brezhnev called construction of the transcontinental trunk pipelines key construction projects of the five-year plan.

The CPSU Central Committee recently published a decree on the work of the Ministry of Construction of Petroleum and Gas Industry Enterprises, whose subdivisions are developing pipeline transportation in the country. This document outlines a clear-cut program of technical re-equipping of the sector and introduction of progressive construction methods.

Our story is about progress in construction of the gas pipeline.

The detachment of line workers of Glavsibtruboprovodstroy [possibly Main Administration of Pipeline Construction in Siberia] occupies a special place among the collectives who are developing the underground wealth of the Tyumen' North. Its job is to create a route on the ground for mighty streams of gas to flow across the tundra and taiga. This is a region of no roads, swamps, and innumerable streams and rivers.

Road-construction administration No 22 of the Severtrubotrovodstroy [Northern Pipeline Construction] Trust builds winter roads, clears routes, lays trenches, and buries the pipeline with earth after it is laid. Until recently things were going poorly there, to be blunt. Because of worker mobility the collective had

changed completely in two years. The turn for the better began in the muddy fall of 1979 when the administration had to move its base to a new sector, near kilometer No 133 of the line from Nadym to Punga. There was no question about moving. The question was where? The housing situation was bad. There was no bathhouse and no dining hall. And there was no longer time to build everything; winter had almost arrived and they would be lucky to have time to overhaul the equipment.

"I remember sitting with Valeriy Nikolayevich Gavrilov, our party secretary, and thinking bitterly about having to spend the winter this way," A. Bagin, who was serving as the head of the administration at that time, recalls today. "No, we decided, the equipment will have to wait. The spare parts would be late anyway, but without normal living conditions no real work could take place."

The collective received this decision with understanding and gratitude. Machine operators became carpenters for a time. They built a dormitory, a bathhouse, and a medical point. They made an agreement with a film distribution agency and now the red corner regularly shows artistic films. They hold lectures and give concerts by amateur artists. The dormitories became neat and clean. People became more lively and cheerful. And this was immediately reflected in the work. The road-building administration was one of the best in the sector for the results of last year.

The construction sites of the pipeline builders are spread over great distances. They have to cross several autonomous republics and oblasts. Subdivisions on the line are always on the road. This makes it difficult to carry on political indoctrination work in the collective and to exchange know-how. The party committee of the USSR Ministry of Construction of Petroleum and Gas Industry Enterprises had to modify the forms and methods of its work considerably. The sectorial ideological commission is now in its third year of operation. It is essentially a coordinating and methods center which helps actively in work with the people right on the line. After all, in just the corridor of the trunk gas lines stretching from Urengoy to the center of the country there are 47 base communities where about 4,000 communists are working.

The party committees set up operational groups which include the most reputable communists in the sector. The operational groups coordinate their activity closely with local with local party bodies. When necessary temporary party and party-komsomol groups are formed in the sections. There are now more than 60 such groups working on the line from Urengoy to Novopskov.

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TECHNICAL ADVANCES, PROBLEMS, AND PROSPECTS FOR NORTHERN GAS PIPELINES

Moscow PRAVDA in Russian 7 May 82 p 2

[Conclusion of article by V. Lisin and V. Parfenov: "The Energy of the Tyumen' North"]

[Excerpt] Vladimir Petrovich Kuramin, chairman of the interdepartmental territorial commission on the West Siberian petroleum-gas complex with whom we were flying over the Tyumen' North, was very happy. In the month of March alone, which fortunately had been cold, a great deal of work had been done on the lines!

It is difficult to extract natural gas in the Yamal tundra. But it is even more difficult to lay pipelines thousands of kilometers long to transport it to consumption points. It is good that more and more energy-intensive enterprises have been built in the eastern regions in recent years, closer to fuel sources. Nonetheless, an enormous amount of fuel must be moved from the northern part of Tyumenskaya Oblast to the center and south of the country. And it appears today that the volume of gas extraction is not determined by the capacities of the gas fields, but by the carrying capacity of the transcontinental trunk pipelines. That is why construction of large pipeline systems must be given paramount attention.

Those who are now over 50 recall the great excitement in the country on the day 30 years ago when Saratov gas reached Moscow. Since that time we have built approximately 130,000 kilometers of trunk gas pipelines, 10 times larger than that first gas line. We have built the most far-reaching unified gas supply system in the world, encompassing all the Union republics and all the economic regions. If the trunk pipelines were stretched in one line along the Equator, the steel belt would ring the Earth more than three times. The energy of natural gas is used today to produce 93 percent of our steel and cast iron and most of our cement, porcelain, and crystal. About 200 million Soviet people use natural gas in their homes.

During the current five-year plan more than 20,000 kilometers of new, special large-diameter pipeline is to be laid from Western Siberia to the Central Zone. Construction workers have already connected up about one-third of the lines today.

Each new superlong gas pipeline is a kind of testing ground for new construction ideas. In fact, it was on the Urengoy — Gryazovets line that construction workers

decided to put aside the usual idea of traditional deadlines for bringing a trunk pipeline to projected capacity. Whereas formerly this took three or four years, the "Gryazovets line" was brought to projected capacity in the same year that construction was completed. On the Urengoy — Petrovsk line they planned to increase the rate of construction of technological complexes by 50-100 percent. The collectives of Kuybyshevtruboprovodstroy [possibly Kuybyshev Pipeline Construction Trust] and the Transcaucasian Administration were the first to set an example of such work. They began consistently turning over one kilometer of finished pipeline a day. There is no denying that this is an excellent result. Soon the entire construction project was "marching" at a stepped-up pace.

On the trunk line now under construction from Urengoy to Novopskov in Voroshilovgradskaya Oblast, where the largest gas lines now operating in the country converge at a single center, construction workers decided to make maximum use of the possibilities of a multiline system of pipelines in a single technological corridor. This eliminated the need to move construction detachments thousands of kilometers. The pace of work in the "corridor" is three times as high as work with "Petrovskaya" pipe.

Needless to say, no success comes easy. Each construction project demands a high level of organization, creativity, and initiative by the managers and all workers. But it is particularly important that the line workers are undertaking each new job with even greater energy and vigor than last year. Hardships only toughen them, strengthen them organizationally, and enrich them with experience. That is why there is good reason to believe that not just the five gas pipelines within the USSR, but also the sixth, the Urengoy — Uzhgorod export pipeline which is 4,500 kilometers long, will be completed ahead of schedule.

There is no question that construction workers have learned to build large energy systems quickly. But even this pace is no longer sufficient today. What is the solution? The answer is technical re-equipping of construction workers. That is why they were so happy at the CPSU Central Committee decree on technical re-equipping of the sector and introduction of progressive construction methods.

Thus it has been the case that construction workers, especially those who work in the most difficult, northern arm of the pipelines, must get by without permanent roads. Of course a road along the pipelines would greatly increase the pace of work, especially the construction of compressor plants which are like factories located at 100-kilometer intervals along the line.

Concrete roads are also extremely necessary for operations workers who work for many years on the line, controlling gas flows and servicing and restoring the equipment of the compressor plants. Roads along the northern gas lines are especially necessary during the muddy season, from late spring through the summer and into early fall, until cold weather freezes the swamps and rivers. A concrete highway would eliminate seasonality in the work of the construction workers and enable them to operate at full strength for 12 months a year, not five. Perhaps it would be possible to try this, to build one reinforced concrete highway in the "corridor" along which the six large trunk gas pipelines will run.

Enterprises of the USSR Ministry of Construction of Petroleum and Gas Industry Enterprises have developed models of machinery capable of greatly increasing the labor output of line workers. The Tyumen' all-terrain swamp vehicle has been

highly praised by construction workers. This machine is capable of taking more than 13 tons of freight on its platform, but the specific pressure of its tracks on the ground is less than that created by a fast-moving skier. Another example is the ETR-254 rotary excavator. This heavy-duty earthmoving machine can extract 1,200 cubic meters of frozen ground in an hour and prepare a trench 2.5 meters deep for large-diameter pipe. The new trench covering machine that is designed to cover over trunk pipelines year-round has been recognized on the lines. This machine can both remove and replace the fertile layer of earth, as well as lay gravel on the bottom of the trench and perform grading work in the winter. Its productivity is 1,200 cubic meters an hour and it has an operating width of 3.5 meters.

We could also mention other models of machinery which to some degree eliminate seasonality of work in the North. But here is what is disturbing. In the near future the lines will not have adequate supplies of this machinery. The reasons for this are known; the construction ministry itself does not have large plants which can produce such machinery in series production. But those departments which should be working on this are using all kinds of pretexts to evade not only development of the necessary machinery and mechanisms, but even "circulation" of models that are already finished. This applies above all to the Ministry of Construction, Road, and Municipal Machine Building and the Ministry of Heavy and Transport Machine Building. The recent decree of the CPSU Central Committee will, we believe, inspire them to straighten things out.

There still have not been any real advances in building freight-carrying dirigibles, even though it would seem obvious to everyone that this is the least expensive form of transportation. Dirigibles could be reliable helpers to the workers who are conquering the swamps of Western Siberia and the enormous snow-covered spaces of Yamal. Dirigibles would not only save personnel and equipment for the line workers, but would also offer a significant time savings by making it possible to deliver freight to any point on the line.

We especially want to say a good word about the Sever-1 electrowelding complex developed by scientists at the Kiev Institute imeni Ye. Paton and specialists of the Ministry of Construction of Petroleum and Gas Industry Enterprises. We had numerous opportunities to observe this mechanical welder at work. The crimson at the connecting point of two pipes is clearly visible and heats up brighter and brighter. A sheaf of white-hot sparks fly off in an arc in all directions. You cannot take your eyes off the fiery ring circling the pipe. It is pretty! A manual worker welds one joint in 8-10 hours. To put a seam around the junction of the pipe he has to climb its steep sides and lie in the snow. But the Sever-1 makes the joint in just four minutes. Even considering preparatory operations under the harshest northern conditions this unit can weld more than three kilometers of steel pipeline in a day. And specialists believe that even this excellent record is not the maximum for the machine.

The Sever-1 is constantly being modernized. Its shortcomings are being eliminated in the work process and the work technology is being developed. It is new only on the large-diameter lines. A similar type of unit has been welding small pipelines for a long time. It has already been used to lay 26,000 kilometers of underground trunk pipelines. The USSR Ministry of Construction and Petroleum and Gas Construction Industry Enterprises now has 20 small-diameter pipe-welding

units. In a year they help lay about 3,000 kilometers. But the Ministry of Electrical Equipment Industry has not yet organized series production of these units.

Construction of gas pipelines is an expensive business. It involves large expenditures of metal and enormous capital investment. For example, each thousand kilometers of large-diameter pipeline requires just less than 1 million tons of pipe. But the final results can be improved substantially. To do this we must convert from a working pressure of 75 atmospheres to 100 atmospheres and more.

The State Expert Examining Commission of USSR Gosplan recently analyzed the potential for organizing transportation of large amounts of natural gas from Western Siberia to the European part of the USSR. With the same arrangement of compressor plants at intervals of 90-100 kilometers, conversion to higher pressure would make it possible to pump much more fuel with a smaller number of pipelines traveling from the North to the Central Zone. If we consider that capital expenditures for construction of each gas pipeline are 2.5-3 billion rubles and 2.5 million tons of pipe are required, it is easy to imagine the enormous savings that could be achieved by building a new class of trunk pipeline systems.

The conversion to the new phase of pipeline construction will require new materials and equipment: multilayered pipes, more powerful and economical gas pumping units, and reliable electronic equipment. We cannot say that no work has been done in this area, but it must be done on a larger scale. There must be more active participation by the Ministry of Gas Industry, the Ministry of Construction of Petroleum and Gas Industry Enterprises, the USSR Ministry of Ferrous Metallurgy, and the machine building ministries. It is the job of the interdepartmental territorial commission of USSR Gosplan to see that this is done.

11,176
CSO: 1822/178

EXTENT OF WEST SIBERIAN GAS-PETROLEUM RESERVES REVIEWED

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 16 Apr 82 p 2

[Article by R. A. Sumbatov, deputy USSR minister of geology: "Will the Resources of Western Siberia Last Long?"]

> [Exercepts] "The newspapers today are writing a great deal about the 'contract of the century,' which contemplates the delivery of Siberian gas to Western Europe. In addition we are exporting petroleum and gas to the socialist countries. In this connection I would like to know the opinion of a competent specialist on how the resources of our main fuel base, Western Siberia, are assessed. Will the resources of this region last long? As far as I know, this is a problem that concerns many people today.
>
> [Signed] V. Popov, Michurinsk"

> We showed this letter, received by the editors, to deputy USSR minister of geology R. A. Sumbatov. Here is what he said.

Now as for the "contract of the century," was the long-term potential of the Siberian raw material base considered from a geological standpoint in concluding it? On the basis of the reliable data which we now have we can give a clear, affirmative answer to this question.

The reserves of just one of the giant gas deposits of the Tyumen' North, the Urengoy deposit, are adequate to supply the domestic needs of the country and export for many years. And the total gas resources there are estimated to be tens of trillions of cubic meters. The 40 billion cubic meters of Siberian gas delivered annually to Western Europe as contemplated by the agreements will be only a small part of the reserves of the region.

We must also consider that geological exploration has by no means been completed in Western Siberia. Our expeditions are moving further and further north, investigating ever-deeper horizons where, according to predictions, we can expect new discoveries. We have already received positive results from drilling the first exploratory wells to depths of 4,000- 4,500 meters. In this five-year plan excavation of the unique eight-kilometer well will begin. It will make it possible to determine the deep structure of the region's interior precisely.

Methods are being worked out to search for new types of petroleum and gas deposits not associated with the classic anticlinal folds in the earth's crust.

In short, the search is going forward on a broad front, in all areas. And there is no doubt that the result will be a significant increase in the resources of hydrocarbon raw material. The largest detachment of Soviet geologists is now working in Western Siberia, about 60,000 persons. Glavtyumengeologiya [possibly Main Geological Administration for the Tyumen' Region] has good scientific facilities and modern equipment, which enables it to constantly increase the pace of work and improve the efficiency and quality of prospecting and geological exploration work.

Of course, the development of northern regions does not come at a low price. It demands large capital investment and the enlistment of additional human and material resources. Increasing production capacities at an accelerated pace and the problem of creating normal working and living conditions for thousdands of people in harsh climates are becoming especially important. I would like to stress this particularly, to avoid the impression that we can get at the underground treasures of Siberia easily, so to speak, with no special expenditure and effort.

11,176
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EARLY PROGRESS ON CONSTRUCTION OF ASTRAKHAN' GAS PROJECT REPORTED

Moscow STROITEL'NAYA GAZETA in Russian 9 Apr 82 p 2

[Article by L. Borodin, first secretary of the Astrakhanskaya Oblast CPSU Committee: "The Address Is Becoming Popular"]

> [Text] "Begin establishment of an industrial center to extract and process gas and condensate and to produce sulfur, based on the Astrakhan' gas-condensate deposit" (from the document "Basic Directions of Economic and Social Development of the USSR")

The name of Aksarayskaya Station used to be known to very few, perhaps only the people of Astrakahn' and geologists. But I am confident that this address will soon become as widely known as Tol'yatti or Naberezhnyye Chelny. Already today dozens of trains are heading for it carrying construction machinery, construction elements, and materials. And it is in Aksarayskaya, a few dozen kilometers from Astrakhan', that construction of an enormous gas refining complex is getting underway.

Astrakhan' scientists and geologists have predicted for a long time that a major gas deposit would be found at great depths beneath the oblast. The oblast party committee actively supported the authors of this prediction. Geological exploration work in recent years confirmed the predictions and made it possible to discover the Astrakhan' gas-condensate deposit. It is the largest in the European part of the country and is unique in terms of the components contained in the resource.

Development of the Astrakhan' deposit should make it possible in 1984 to launch capacities to extract and refine 3 billion cubic meters of gas a year with installations to produce sulfur and to purify the gas condensate. In 1986 gas extraction and refining at this deposit should be raised to 6 billion cubic meters a year. This contemplates 3 billion cubic meters of commercial gas, 2 million tons of sulfur, and 1.8 million tons of stable gas condensate.

At the Aksarayskaya site it is necessary to drill 50 producing wells and connect them with the gas refining complex by trunk pipelines. This will be an extremely large enterprise with the latest equipment. Sulfur, stable gas condensate, and other valuable components will be extracted from the gas that comes to it. A number of enterprises are planned to process this raw material.

Major steps are planned to protect the environment. In view of the specific nature of future production and its location near the preserves of the Volga delta and Northern Caspian, laboratory facilities must be built to study and monitor environmental pollution. A series of fish-protection structures must also be built. Already in the early planning stages and also during the process of building the complex steps will have to be taken to insure complete preservation of the preserves of the lower Volga and Northern Caspian.

The infrastructure of an industrial center will develop alongside production facilities. A total of about 1 million square meters of housing is to be built. Cultural-domestic facilities will be built at the same time. It has been decided to build them in the oblast center. People will travel to work by electric train. Pay privileges have been instituted for those who are coming to work on development of the gas-condensate deposit.

The collective of the just-formed Astrakhanpromgazstroy [Astrakhan' Industrial Gas Construction] Construction-Installation Association is taking shape quickly. It has two site-trusts and an administration for supply of production and technological equipment. Before the end of the year another site-trust and specialized mechanization and construction industry engineering trusts will be formed.

The personnel and capacities of Glavastrakhanstroy [possibly Main Administration for Construction in the Astrakhan' Region] are being enlisted in the first phase of construction of projects at the complex. Along with the basic program to develop the oblast center it has been assigned construction of housing and social-cultural-domestic facilities for gas refinery and construction workers in Astrakhan', construction industry and building materials industry enterprises, and the production depots of Astrakhanpromgaz and USSR Gossnab. The USSR Ministry of Industrial Construction must take vigorous steps to increase the capacities of the main administration and to develop its own base.

The construction workers are receiving strong rear support. Plans call for setting up a home-building combine with capacities of 140,000 square meters of housing a year, a reinforced concrete article plant, plants to produce commercial concrete, asphalt concrete, metal construction elements, and bricks, as well as motor vehicle and mechanization depots.

Planning and construction are going forward in parallel. Although certain costs are inevitable here, there is no question that the main thing, time, will be gained. According to norms at least two years is required just to plan a gas refinery.

Documents are being developed for introduction of the "Uzlovoy" [network] method of organizing and managing construction. It will be the basis for introduction of the start-to-finish brigade contract. All buildings and structures will be erected on pile foundations with large-scale use of light design elements.

Plans envision communities for 10,000 construction workers. They will be comfortable and well-organized. Dining halls, stores, bathhouses, and domestic service enterprises are being built together with housing.

The oblast party committee is devoting special attention to this key construction project of the five-year plan. In December of 1981 a plenum of the oblast CPSU committee was held and discussed the tasks of communists and all working people of the oblast to develop the gas-condensate deposit. Skilled specialists and party workers were sent from industrial enterprises to the construction site. Shock Komsomol-youth detachments are being formed. An oblast party headquarters has been set up to oversee construction of the complex. It is headed by the secretary of the oblast CPSU committee. One of the recent meetings of the headquarters was devoted to the construction of housing and social-cultural-domestic facilities.

Of course, it is far from simple to begin such a construction project from nothing, and certain hardships are inevitable. The construction workers could do a better job if technical documentation arrived on time. And it is not just a matter of certain planning institutes violating schedules for production of working drawings. The client, the Astrakhangazprom Association, has proved unable to analyze incoming documents promptly; it has no special service for this purpose. In our opinion it would be wise to follow the example of other major construction projects and set up a planning administration within the association. It would assume responsibility for coordinating the actions of planning organizations.

The construction project is also upset by the lack of reliable electricity supply. The USSR Ministry of Gas Industry and Ministry of Industrial Construction simply cannot agree on who is to be in charge of the electrical grids at the construction site.

Each day more supplies are being shipped to the construction site, but the carrying capacity of the existing single-track railroad is small. It is essential to lay a second track immediately, first of all in the segment from Astrakhan' to Aksarayskaya station. At the same time the Ministry of Transportation Construction should step up construction of the bridge across the Buzan River.

The population of Astrakhan' is growing noticeably. This will require additional steps to increase the production of industrial and agricultural output. In particular, we have worked out a program to intensify agricultural production in the suburban rayons. It is now being implemented with the capital of the RSFSR Ministry of Agriculture, the RSFSR Ministry of Fruit and Vegetable Raising, and the kolkhozes. But this capital is inadequate. It would be good if the Ministry of Gas Industry took a very active part in carrying out the food and other social programs. Estimate-financial calculations should envision allocation of capital by special designation for the construction of poultry factories, livestock complexes, hothouses, and enterprises to process agricultural output to meet the needs of the new collectives.

The first quarter has ended. It is time to begin formulating a program to develop the complex in the next year. The total volume of upcoming work is known. But it is not yet clear which projects will be built and in which order. The construction of housing in Astrakhan' causes us to worry. In 1983 the volume of housing construction will double, reaching 240,000 square meters. But the existing capacities of Glavastrakhastroy are not capable of insuring

introduction of more than 120,000 square meters of housing a year. The new home-building combine will not go into operation sooner than the end of the five-year plan. Therefore, it is plainly necessary for the USSR Ministry of Industrial Construction to decide without delay how and at whose expense the planned growth in housing construction will take place.

The participants in development of the Astrakhan' gas condensate deposit must take the most effective steps possible immediately to see that the complex is built fully and at an accelerated pace.

11,176
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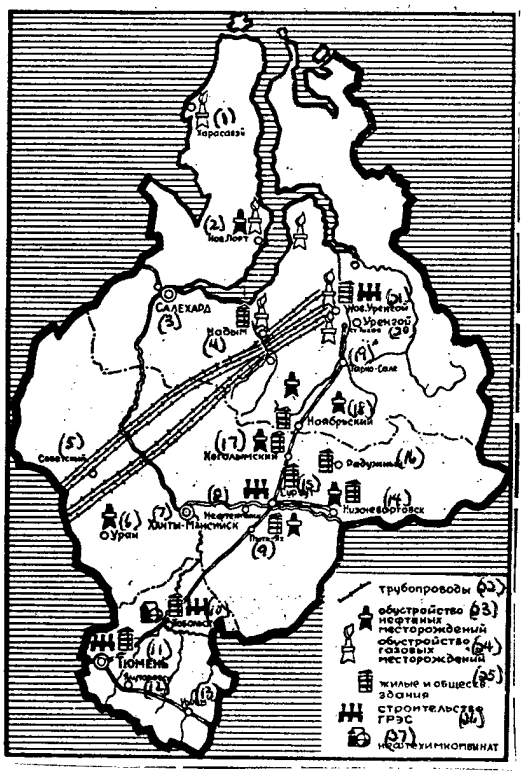
GENERAL

CONSTRUCTION PLANS OUTLINED FOR TYUMENSKAYA OBLAST

Baku VYSHKA in Russian 25 Apr 82 p 3

[Article: "Kray of New Construction Projects"]

[Excerpts] The workers of the Tyumenskaya Oblast in the 11th Five-Year Plan are faced with realizing a large program for capital construction.



Key:

1. Kharasavzy
2. Nov. Port
3. Salekhard
4. Nadym
5. Sovetskiy
6. Uray
7. Khanty-Mansiysk
8. Nefteyugansk
9. Pyt'-Yakh
10. Tobol'sk
11. Tyumen'
12. Yalutorovsk
13. Ishim
14. Nizhnevartovsk
15. Surgut
16. Raduzhnyy
17. Kogolymskiy
18. Noyabr'skiy
19. Tarko-Sale
20. Urengoy
21. Nov. Urengoy
22. pipelines
23. build-up of oil fields
24. build-up of gas fields
25. housing and public buildings
26. construction of GRES
27. petrochemical combine

The volume of work for accelerated development of the gas industry will especially increase. The rates stipulated are unusual. In the 11th Five-Year Plan it is necessary to create fields and main pipelines of considerably greater output than in the three previous, that is, during the entire period from the beginning of development of the gas fields in the oblast.

The main application of forces will be at the Urengoy field which in 1985 should yield about 250 billion m^3 of gas. Here during the five-year plan it remains to drill 955 producer wells, lay over 2,000 km of circuits and intra-field collectors, and build 16 units of comprehensive gas preparation. This will be the precise starting point for six giant pipelines which Leonid Il'ich Brezhnev called the central construction projects of the five-year plan.

It remains to build triple the number of roads with solid pavement in difficult-access oil and gas regions than in the last five-year plan, and bring the railroad to permanent operation up to Noviy Urengoy, reconstruct the railroad route Yagel'naya-Nadym, and develop the Tyumen' railroad junction.

It is planned to construct mechanized river moorings in Nizhnevartovsk, Nadym, Labytnangy, freight yards, airports and a landing strip.

In the 11th Five-Year Plan, almost R 4 billion have been allocated for construction of housing and social-cultural-general facilities, 1.8-fold more than in the 10th Five-Year Plan. It is planned to construct apartments with total area of over 10 million m^2, and to increase greatly the number of places in schools, preschool institutions and hospitals.

9035
CSO: 1822/183

GENERAL

CONSTRUCTION OF EXPORT GAS PIPELINE APPROACHES CARPATHIANS

Moscow LITERATURNAYA GAZETA in Russian No 19, 12 May 82 p 12

[Article by special correspondent T. Bazhenov and A. Gorokhov: "From Urengoy to the Carpathians"]

[Text] The skylarks fill the Angeliv grove above the Yasen village. Spring was dominant everywhere here in the foothills of the Carpathians.

It is true that the people who came here from Armenia and Russia, and Azerbaijan, Georgia, and Turkmenia did not generally feel like poetry. They had more than 100 kilometers of pipelines laid in steep mountains behind them. Before them were almost 100,000 versts through the Carpathians to Uzhgorod.

At the November (1981) Plenum of the CPSU Central Committee, Leonid Il'ich Brezhnev named five of the largest main gas pipelines of West Siberia-center of the country, as well as the export gas pipeline Urengoy-Uzhgorod as the central construction project of the five-year plan. Its length is 4,650 km. These are the linear dimensions of the route as the specialists say.

These are grand projects. Their realization is unthinkable without the use of a whole set of machines, mechanisms and technology. It is no accident that in the Ministry of Construction of Oil and Gas Industry Enterprises for the 11th Five-Year Plan has approved a special target program. Its task is to organize production line-rapid construction of pipelines under the most complicated natural and geological conditions.

The leaders of the Transcaucasus administration of gas pipeline construction, the general contractor on this section of the pipeline, have hired foremen of the highest skill.

One of the main specialties on these construction sites is the welder. Has Yaroslav Vinnitskiy ever counted the kilometers of pipes he has welded?

Bogdan Dumich, Konstantin Gorskiy, Nikolay Shcheglyuk, Yaroslav Spanchak, all come from one brigade of welders. They rested on the small bridge over the swelling stream which the all-terrain vehicle of the route markers attempted to forge. They lay steel pipes under complicated conditions. Here there are rivers and mountains, swamps and abysses. The pipe must occupy the prescribed place, and gas will pass through it under pressure of 75 atmospheres.

A pipe-welding base has already been created near the Yasen' village. Here the pipes are joined, bent and checked on x-ray units. Then they are shipped to the route.

It remains for the bulldozer operator Roman Onys'kiv to cut a "shelf" in the mountain, a level band of earth for the excavators to pass.

The mood of the insulator Rafayel Sarkisov and his colleague Oleg Tsybukh is excellent.

The gas pipeline is being built, the route settlement where there is already the first street is being built.

The skylarks gather above the Yasen' village. Spring has come to the route.

9035
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GEOLOGISTS SLIGHTED IN COMFORTABLE LIVING CONDITIONS

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[Article by N. Devyukhin, first secretary of the Purovskiy CPSU raykom: "Comfort in the Taiga Settlement"]

[Excerpts] In the previously uninhabited forest tundra, six new populated areas have grown up, including Noyabr'sk with population of many thousands. Production complexes have been set up for extraction, preparation and transporting of oil and gas. Hundreds of kilometers of pipelines have been laid. The country has already received a million T of "black gold" and 50 billion cubic meters of gas from the region.

These numbers indicate the importance of the new sectors of industry. Whereas in the first 3 years of the last five-year plan, the region realized products for R 6 million, in the last 2 years, it has been R 308 million.

Who were the first to lay the roads to these gratifying changes? Of course the geologists. The rates of development of the region continue to remain high. Here five expeditions of deep drilling and two geophysical expeditions are conducting further exploration. Several specialized enterprises have been set up. In geology we have over 7,000 people working. Recently the volume of search and exploration increased more than 1.5-fold, and several new oil and gas fields were discovered.

Wells here have become deeper, their design has become more complicated, but the experience accumulated by the drillers and the increased professional level make it possible not to reduce the indicators, but on the contrary, improve them. In their socialist commitments for 1982, the leading brigades outlined drilling today of 15,000 meters of rock, much more than the plan For the collectives headed by V. Isayev and N. Gelbov, this is a frontier that has already been reached. Both of them have decided to fulfill the 11th Five-Year Plan in 3.5 years.

In recent years the technical potential of search and exploration organizations has risen and there has been noticeable progress in production control. The appearance in nature of geological settlements has changed. The temporary housing, tents, ravines and mobile homes have been replaced by well-built houses. Support settlements of the city type are developing, such as, for example, Tarko-Sale and Urengoy.

It is still difficult for the geologists. Their living conditions leave much to be desired. The main work under the open sky, under field conditions, in winter in frost of 50°, and in summer under attacking clouds of mosquitoes.

Roughly once a week the helicopter brings the geologists to the settlements and to their families. No other form of organization of labor has been found. Under these conditions it is very important to create at the production site, and especially at the base settlements, the maximum social and general conveniences. However, the planning institutes and the organizations, the appropriate sections of union and republic ministries of geology which for many years already have been developing the "optimal type" of watch complex, have not yet proceeded further than the standard mobile homes, which are not very comfortable, are inconvenient and are unreliable in transporting. As of yet there are no standard equipped dryers, baths, or reading rooms. By the way, there is an acute shortage for the existing mobile homes in the north.

This is not a new problem, it has been discussed many times at all levels. Why do we have to return to it again? This is why. Now the work and daily life of the geologists is becoming more closely involved with the vital activity of the collectives of oil workers and gas workers who have considerably better production conditions, and whose social needs are satisfied much more and more quickly. Before the geologists were separated by years and distances from the operators, now they work in parallel, in one place at one time. And the known truth is that everything comes out in comparison.

This thought was developed once in a conversation with me by the engineer of the Tarko-Sale oil exploration expedition. Deputy of the Yamalo-Nenetsk okrug council T. Suzdal'tseva. Tamara Vasil'yevna said:

"When I came here 16 years ago after the institute, there was no two story home in Tarko-Sale. No one even thought about well-built apartments. I lived in the office, having brought there a folding bed, and often spent the night at the boreholes. None of the others demanded anything, everyone understood: the expedition is only beginning to act. Today we are surrounded by expanding comfortable worker settlements, whole cities of gas workers and oil workers. Our specialists always find work for them, some of them even 'settle' there. If the difference in the conditions will be so noticeable in the future, then it will be difficult for the geologists to get personnel."

There is reason behind these words. Supplementing of the geological exploration organizations with specialists for the ever increasing volumes of work is more complicated. At times people leave the expeditions after giving many years to their work: there is no housing, children's institutions, or conditions for recreation. The prestige of the exploration professions has decreased among the young people. This is noticeable, say in the entrance examinations for different departments of the Tyumen' Industrial Institute.

This process can and mandatorily must be altered. There is only one way: improvement in the organization of labor of the geologists, creation for them if not better, then equal social and general conditions with the field workers. The situation is clearly not in favor of the geologists. Opening of housing in

the region is increasing at rapid rates, however the supply of the apartments of the geological explorer collectives is much lower than the oil and gas extracting enterprises.

The regional party organization, the Soviet of People's Deputies, by using their potentialities are striving to correct this inconsistency. But it is impossible not to say that because of a shortage in allocated construction materials and limits on financing of capital construction in the support settlements of the geologists, not a single facility has been raised in 5 years for the development of culture, athletics, or general servicing of the population. For several years in a row, orders have not been fulfilled for the explorers of the depths for the supply of structural parts for greenhouses where early vegetables which are so necessary in the northern latitudes be grown. This is a question whose importance was especially stressed in the recently adopted decree of the CPSU Central Committee and the USSR Council of Ministers "Comprehensive Development of Agriculture in the Regions of Siberia, the Far East and in the Kurganskaya Oblast."

I would like to isolate yet another problem which I am convinced troubles not only the geologists. After working in the north for 15-20 years, the majority of them do not have apartments in regions with a more suitable climate. When a person is 50 and over, the polar regions are no longer the best place for health. The central board is not capable of supplying housing in Tyumen' for all those who desire it, even those who are going for a deserved rest.

The veterans have monetary savings. Many ask for allocation of a place for cooperative construction in other regions of the country. But the system of Glavtyumengeologiya does not have these cooperatives. With the attentive examination in the Ministry of Geology and the trade union central committee of the sector, this question could probably be solved in a positive manner.

Those who have worked in oil exploration in the 1950's-1960's, remember with great warmth the meeting with the artists, composers and writers. They came directly to the boreholes or to small clubs and provided an emotional charge for many months. Now there are no such meetings. The Ministry of Culture sends to the Tyumen' North many creative collectives, but they, perhaps guided by economic considerations, usually only go to the major oil and gas extracting centers.

The geologists as before remain at one of the most important sections of entrance to the north, increasing the reserves of the West Siberian oil and gas complex, providing for tomorrow for the power engineering of our country. The geologists in the most active manner have been included in the patriotic movement of the Tyumen' workers for early achievement at the fields of a daily output of a million tons of oil and a billion m^3 of gas. The explorers of the depths with their irreproachable and selfless labor deserve attention and concern.

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